POPULATION COVERAGE IN

CERVICAL CYTOLOGY PROGRAMMES

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DECLARATION

The work for this thesis developed out of a requirement for an evaluation of the use of the Family Practitioner Committee Register and the Cervical Screening Programme by North Derbyshire Health Authority with whom I was working as a Registrar in Community Medicine. The field work was carried out while I was in that post (1983-5) and continued while I was working as a Senior Registrar with Trent Regional Health Authority from 1985-1986.

Whilst my Senior colleagues in the two Health Authorities gave me advice on the development of the project, there was no Academic advice available locally. After collection of the data, and after taking up my post with Medway Health Authority, initially as a Senior Registrar and since April 1987 as a Specialist in Community Medicine, Professor Opit of the Health Services Research Unit at the University of Kent has given advice on the writing up, and Dr. Joliffe of the Mathematical Institute at the University of Kent arranged for one of his MSc. students to work with the data relating to practice organisation and census data, which has been of value in developing the statistical analysis for Chapter 7 and the multivariate analysis in Chapter 8.

On the whole, however, this thesis is my own work, much of it carried out in my spare time, whilst continuing in full time service employment.

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ABSTRACT

Screening for Cervical Cancer has been demonstrated to meet the criteria for a screening test, and in other countries, notably Finland, Iceland and British Columbia, has been shown to reduce the mortality from this disease. In England and Wales a policy has been developed for 5 yearly screening of women aged 20-64, with emphasis on older women, particularly those who have never been screened. This thesis aims to examine the population coverage achieved by local cervical screening programmes and to determine which system is most successful, and how to achieve maximun population coverage. Derbyshire Family Practitioner Committee was one of the first to implement a computerised recall system based on the FPC register. Screening information from 1979 to 1985 was entered, and analysed by age and general practitioner for 26 Chesterfield practices providing a database for comparison with survey data on practice organisation, and socio-economic data obtained from the 1981 census. Wide variations between practices in the proportion of women with a record of screening were found to be related to implementation of a practice call system, and use of an age-sex register to identify women due for screening. Women from areas with a high proportion of households in council housing, and high proportion in mining, were less likely to have a screening record. Screening increased in 1983-4 with the implementation of computerised recall, but only a small proportion of all smears were from women recalled on this system. 40% of women aged 20-64 had no record of screening. A detailed survey of 248 older unscreened women and 302 screened controls in 4 Chesterfield practices showed that these comprised both low risk single nulliparous women and also higher risk multiparous women, and smokers. Interesting differences were found in terms of husband's occupation. Screened women were more likely to lead a risk taking lifestyle in terms of smoking, drinking and nutrition. Unscreened women were less likely to be in possession of the correct information in terms of the value of screening, and many had missed out on the opportunity for screening presented by Family Planning Clinics or hospital obstetric care. The survey highlighted problems of embarrassment and fear cited by both screened and unscreened women. The implications for General Practitioners, Family Practitioner Committees and Health Authorities are discussed and recommendations made.

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CHAPTER 1

INTRODUCTION

There are 2000 deaths and 4000 registrations in England and Wales annually from cervical cancer, and a further 5000 registrations for carcinoma in situ. The ability to detect pre-malignant changes in the cervical epithelium by examination of smears taken from the cervix led to the assumption that case finding by screening will facilitate early treatment and prevention of invasive disease.

Development of Screening

MacGregor and Baird (1963) have summarised the early historical background of exfoliative cytology. The discovery of precursors of cervical cancer has been described by Johnson (1969) and Langley (1976):-

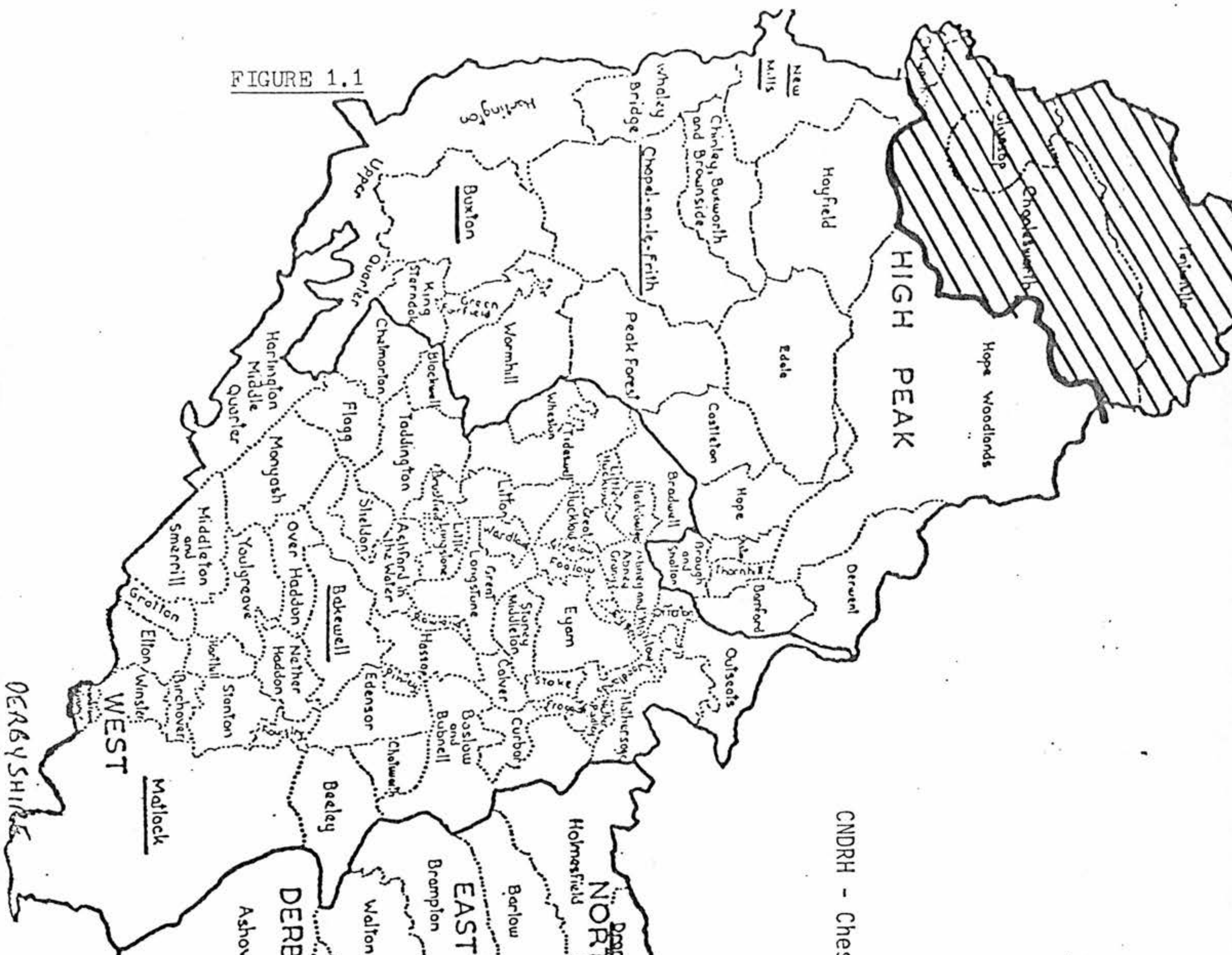
> Williams in the Harveian lecture of 1886 illustrated a symptomless early carcinoma of the cervix. Cullen in 1900, Schauenblein in 1908 and Rubin in 1910 described structural changes in the epithelium at the margin of invasive carcinomas. Rubin argued that these changes preceded the stage of invasion, and used the term "carcinoma in situ" to describe these changes. This concept was not generally accepted until 1932 when the term was re-introduced by Broders.

Fragments of malignant tissue were observed in sputum by Waislie in 1851; Dudgeon and Patrick in 1927 in St. Thomas' Hospital examined sputum, urine and other body secretions for malignant cells, and in 1928 in the United States; Papanicolaou used a similar wet fixation technique for diagnosing cancer of the female genital tract (Papanicolaou and Trout, 1943). In the 1940s the full use and significance of this as a routine diagnostic test was realised, and Papanicolaou and Traut published their classic paper in 1943. The diagnostic value of the test was proved in the United States and in Britain, in 1950 by Anderson, 1952 by Watchel and Plester, 1953 by Way, 1957 by Egetton, and in 1961 by Yule and Cameron.

Cytology services were introduced in this country as early as 1949 in Edinburgh (Grant, 1963) using the cervical scrape method advocated by Ayre (1947). Population screening introduced in Memphis in 1952 indicated the advantages of detecting cervical cancer at the curable phase (Erickson et al, 1956).

In 1963 a British Medical Journal editorial stated that "the method is essentially a screening test not aimed at the occasional Out Patient but at all patients at risk - that is, it is usually made on a cervix of normal appearance".

FIGURE 1.1

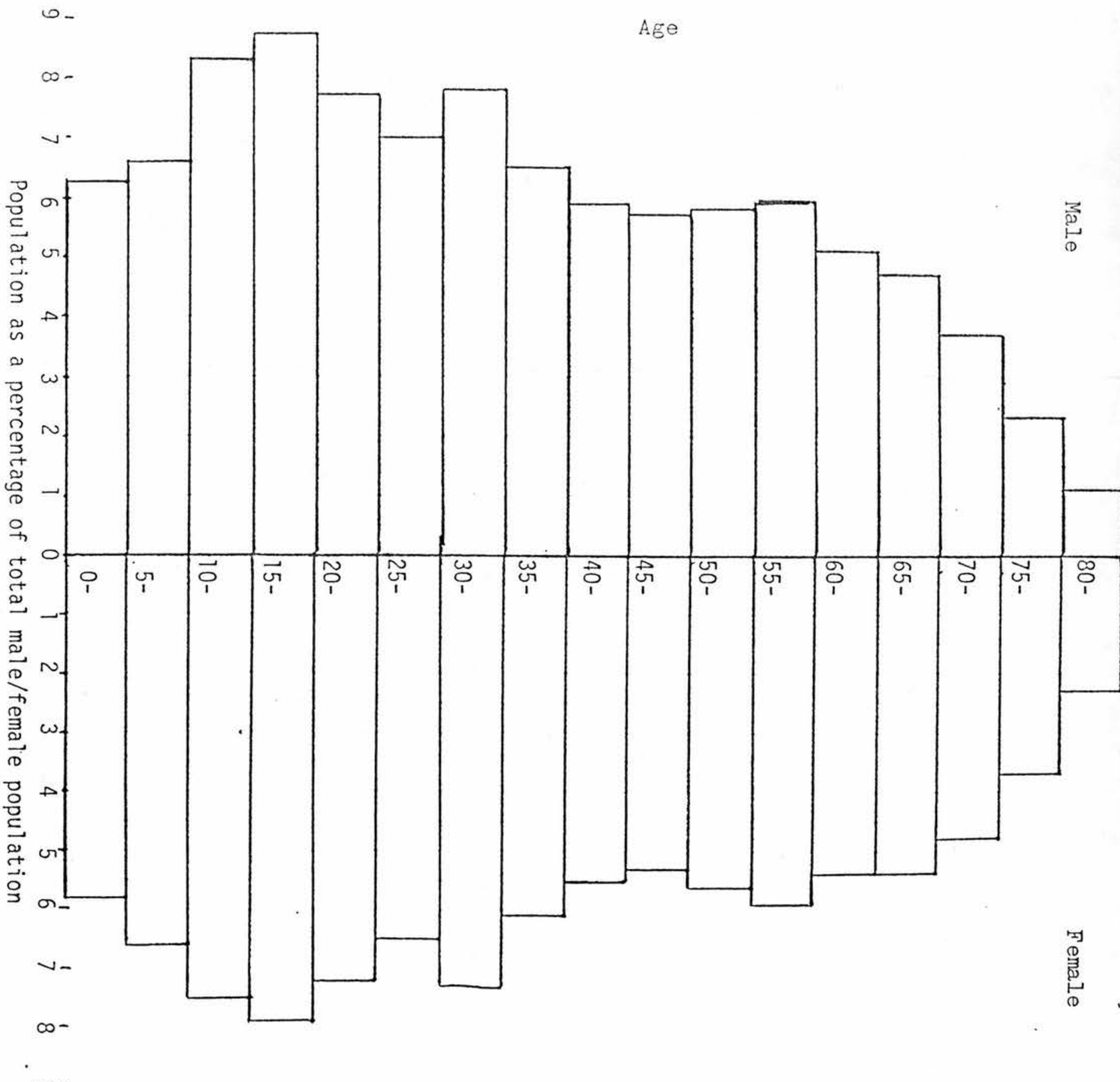

NORTH DERBYSHIRE HEALTH AUTHORITY
CNDRH - Chesterfield and North Derbyshire Royal Hospital
HIGH PEAK
NORTH
EAST
CHESTERFIELD
BOLSOVER
WEST
DERBYSHIRE
Buxton
Chapel-en-le-Frith
New Mills
Glossop
Bakewell
Matlock
Chesterfield
Dronfield
Eckington
Staveley
Bolsover
Clay Cross
CNDRH

After 1963 cervical cytology services in this country became widespread, and in 1967 a national scheme for screening women was introduced (Allman, Chamberlain & Harman, 1974). This was a manual system based on the National Health Service Central Register at Southport from which a 5 yearly recall scheme operated. The principal disadvantage with this system was that being a manual system it was cumbersome to run, and there was no way of identifying those women who had no screening history. It was disbanded in 1981 when Health Authorities were requested to consider setting up their own recall systems (HC(81)14). This request was reinforced in 1984 when Health Authorities were urged to expedite the setting up of both call and recall systems, and to extend these to all sexually active women from the age of 20, ceasing at 65, provided they had had 2 recent negative tests (HC(84)17).

Context of the Study

North Derbyshire District Health Authority, part of the Trent Regional Health Authority, has a population of 359,657 (1981 Census) and is situated in the central Midlands, extending from Chesterfield in the east, across the Peak District to Chapel-en-le-Frith in the west (Fig. 1.1). The north-west is hilly and sparsely populated, the main industries being agriculture and quarrying. North-east Derbyshire, centred on Chesterfield, is highly

FIGURE 1.2 North Derbyshire Population



industrialised, with emphasis on iron and steel manufacturing, metal fabrication, coal mining and other manufacturing including clothing, pottery and chemicals.

North Derbyshire District Health Authority covers 5 Local Authority areas - Chesterfield, Bolsover, North East Derbyshire, West Derbyshire and High Peak. There are 152,500 women aged 15 and over which includes 118,200 aged 15-64. In 1981 17.4% of the population was of pensionable age, and 5.9% was aged 75 and over (Fig 1.2). North East Derbyshire has a young population, with a lower than average proportion aged 65 and over, whilst West Derbyshire, a rural area, has a lower than average proportion of its population aged under 25.

North Derbyshire as a whole has a lower than average proportion of workers in professional and managerial occupations, and higher than average proportion in the non-manual, semi-skilled manual, and unskilled groups, reflecting the heavy industry to be found in Chesterfield and Bolsover. Chesterfield has more than average semi-skilled and unskilled workers, and Bolsover, predominantly a mining area, has nearly 40% who are skilled manual workers. The other Local Authorities within North Derbyshire have slightly less than National average professional and managerial workers, and a high proportion of non-manual workers.

Table 1.1

ANNUAL CERVICAL CANCER DEATHS (ICD 180), NORTH DERBYSHIRE 1974 - 1984 AND TRENT RHA 1984

	DEATHS (ICD 180)					
	15-34		35+		All Ages	
YEAR	NO.	RATE	NO.	RATE	NO.	RATE
1974 - 77	0.5	1.0	11.7	12.4	12.2	6.7
1978 - 81	0.5	1.0	13.7	14.2	14.2	7.7
1982 - 84	0.3	0.7	11.7	11.9	12.0	6.5
Trent 1984	10	1.46	178	14.52	188	8.02

Rate/100,000 women

Source: OPCS

Table 1.2

ANNUAL REGISTRATIONS FOR CARCINOMA OF THE CERVIX (ICD 180) AND CARCINOMA IN SITU (ICD 233.1), NORTH DERBYSHIRE 1974-84, TRENT RHA 1984

YEAR	AGE GROUP					
	15 - 34		35+		All Ages	
	No.	Rate	No.	Rate	No.	Rate
Carcinoma of Cervix						
1974 - 1977	2.0	4.1	21.0	22.1	23.0	12.6
1978 - 1981	4.0	8.2	26.0	26.8	30.0	16.3
1982 - 1984	5.7	11.2	24.7	24.8	30.3	16.5
Trent 1984	57	8.34	314	25.61	371	15.83
Carcinoma in Situ						
1974 - 1977	23.7	48.5	15.2	16.1	39.0	21.3
1978 - 1981	29.5	57.9	19.0	19.6	48.5	26.3
1982 - 1984	45.7	90.4	34.3	34.4	80.0	43.5
Trent 1984	537	78.6	438	35.7	975	41.6

Source: Trent Cancer Registry

Table 1.3

The number of cervical smears examined, and number positive, by year. Chesterfield Royal Hospital - 1974-84

	Year										
	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Number of smears examined	12462	13131	13776	13468	14377	14031	15220	17420	16110	17455	19007
Number of positive smears	36	59	55	77	70	97	87	121	98	104	105
Positive smears as % of all smears	0.29	0.49	0.40	0.57	0.49	0.69	0.57	0.69	0.61	0.61	0.55

Source: SBH 140

The mean total number of deaths from cervical cancer over the years 1974-1984 is 12.9 per year, with no significant upward or downward trend. 96.5% of the deaths have been in the older age groups (35 and over). The annual death rate in North Derbyshire for women aged 35 and over over these 11 years is 12.6/100,000 and compares with a Regional death rate of 14.50/100,000 in 1984. (Table 1.1). Registrations for invasive disease have risen over the same 11 years from 23.0 per year (1974-1977) to 30.3 per year (1982-1984) with the increase mainly in older women. 1984 showed an unexpected and unexplained rise; registrations for carcinoma in situ have risen dramatically from 20 cases in 1974 to 92 in 1984 (Table 1.2). 60% of women with carcinoma in situ are aged under 35, and 40% are 35 and over; this difference is not seen with invasive disease where only 13% are aged less than 35.

The rise in registrations for carcinoma in situ mirrors the increase in the number of smears examined at the Chesterfield Royal Hospital from 12,462 in 1974 to 19,007 in 1984; positive cases (severe dysplasia or carcinoma in situ) rose from 36 in 1974 to 121 in 1981, falling again to 104 in 1983 and 105 in 1984. The proportion which were positive reached a peak at 0.69% in 1979 and 1981, and has since fallen to 0.55% in 1984 (Table 1.3). The number of positive smears has increased very little in the last 6 years; the age distribution is shown in Table

Table 1.4

POSITIVE SMEARS BY AGE, CHESTERFIELD ROYAL HOSPITAL 1974-84

	AGE		
YEAR	35	35+	TOTAL
1974	7	29	36
1975-77	29.7	34.0	63.7
1978-81	46.5	47.2	93.7
1982-84	58.0	44.3	102.3

Source: SBH140

Table 1.5

Annual Number of Cone Biopsies, North Derbyshire Residents in Trent Hospitals by District of Treatment, 1974-1983

YEAR	DISTRICT OF TREATMENT					
	NORTH DERBYSHIRE		OTHER TRENT DISTRICTS		TRENT TOTAL	
	No.	%	No.	%	No.	%
1974-77	30.0	80.6	7.2	19.4	37.2	100.0
1978-81	42.2	81.2	9.8	18.8	52.0	100.0
1982-3	53.0	82.8	11.0	17.2	64.0	100.0

Source: HAA

1.4. The number of positive smears is higher than the total number of registrations for carcinoma in situ; smears relate to those screened at the Chesterfield Royal Hospital, approximately 75% of all North Derbyshire smears, and a proportion of positive smears are severe dysplasia and therefore are not registered.

There were 132 hospital admissions in the Trent Region annually (1979-1983) for North Derbyshire residents with carcinoma in situ and invasive cancer; admissions for cone biopsy increased steadily from 21 in 1974 to 68 in 1983, between 75 and 90% were carried out in North Derbyshire hospitals. The proportion of biopsies which were for invasive disease remained constant over the 10 years 1974 to 1983 at around 22%, and the proportion of in situ cases aged under 35 was also constant at around 65%, similar to the registrations.

Between 1979 and 1983 there were 18 hysterectomies a year, 14 for invasive disease, and 4 for carcinoma in situ; there were 36 admissions to Weston Park Hospital in Sheffield annually, this being the centre for radiotherapy. Table 1.5 shows the distribution of cone biopsies between Chesterfield hospitals serving North Derbyshire and other Trent hospitals. There has been a steady annual increase in this form of treatment, with 80% admitted to Chesterfield hospitals. A few cases are treated each year outside the Trent Region, mainly in the

North West Region, and an unknown number of women are treated by colposcopy and locally destructive methods in Sheffield hospitals as Out Patients. Colposcopy was introduced in Chesterfield in mid 1984.

The Chesterfield Royal Hospital (Fig. 1.1) houses the only Cytology Laboratory in the district, and serves the population of Chesterfield and an area to the east, south and west, covering approximately 80% of the district population. Access for patients in the north-west (High Peak) area is easier to Stockport and Manchester in the North West Region, and for those in the north of the district is easier to Sheffield. Patients on the western and southern boundaries tend to go to Worksop, Mansfield and Derby.

Cervical screening began at Chesterfield Royal Hospital in 1963, and in 1984 screened 19,007 cervical smears, of which 105 were positive. The trend over the past 10 years has been for an increasing number of smears to be sent to the laboratory, but the initial increase in the proportion found to be "positive", i.e. severe dyskaryosis or malignant, in the last 4 years began to decrease (Table 1.3).

Derbyshire Family Practitioner Committee (FPC) has been computerised since 1982. In January 1984 a recall system based on this register was set up using software written by the Trent Regional Health Authority. This was a 5 yearly recall of women aged 35 and over, and those younger women who had had 3 or more pregnancies, identified from records returned from Stockport. It was decided that an in depth study of screening patterns in the district population would enable North Derbyshire District Health Authority to make a planned approach to population coverage by development of a comprehensive cervical screening programme. This thesis describes the evaluation undertaken to provide information on which to base the planning of the programme.

Objectives of the Study

The aim of the study is to examine the population coverage achieved by local cervical screening programmes, and to determine which system is most successful in terms of the proportion of women screened, and how to maximise population coverage.

The objectives were, in a defined population:-

1. To compare the screening response in two periods:
   (i) September 1982 - August 1983 - no formal recall operating
   (ii) September 1983 - August 1984 - FPC computerised 5 year recall

2. To discover the nature of recall/first call systems run by local General Practitioners (GPs), and to examine their relative population coverage.

3. To determine the characteristics of the unscreened population, their knowledge of and attitudes to cervical screening.

4. To make recommendations about future screening arrangements.

Screening information is available from 1979 and it is proposed to use analysis of relevant data entered on the FPC computer as the basis of this study.

TABLE 2.1

Mortality from Carcinoma of the Uterus, 1965-1969

Country	Mortality*
Israel	9.5
Philippines	11.4
Greece	12.6
Bulgaria	14.3
Australia	15.8
Eire	16.8
New Zealand	18.2
Northern Ireland	18.4
Norway	18.5
Finland	18.9
Canada	19.1
Sweden	19.8
United States	19.8
Netherlands	20.3
Switzerland	20.7
England and Wales	20.7
Scotland	21.2
France	22.1
Belgium	22.8

contd. over

TABLE 2.1 contd.

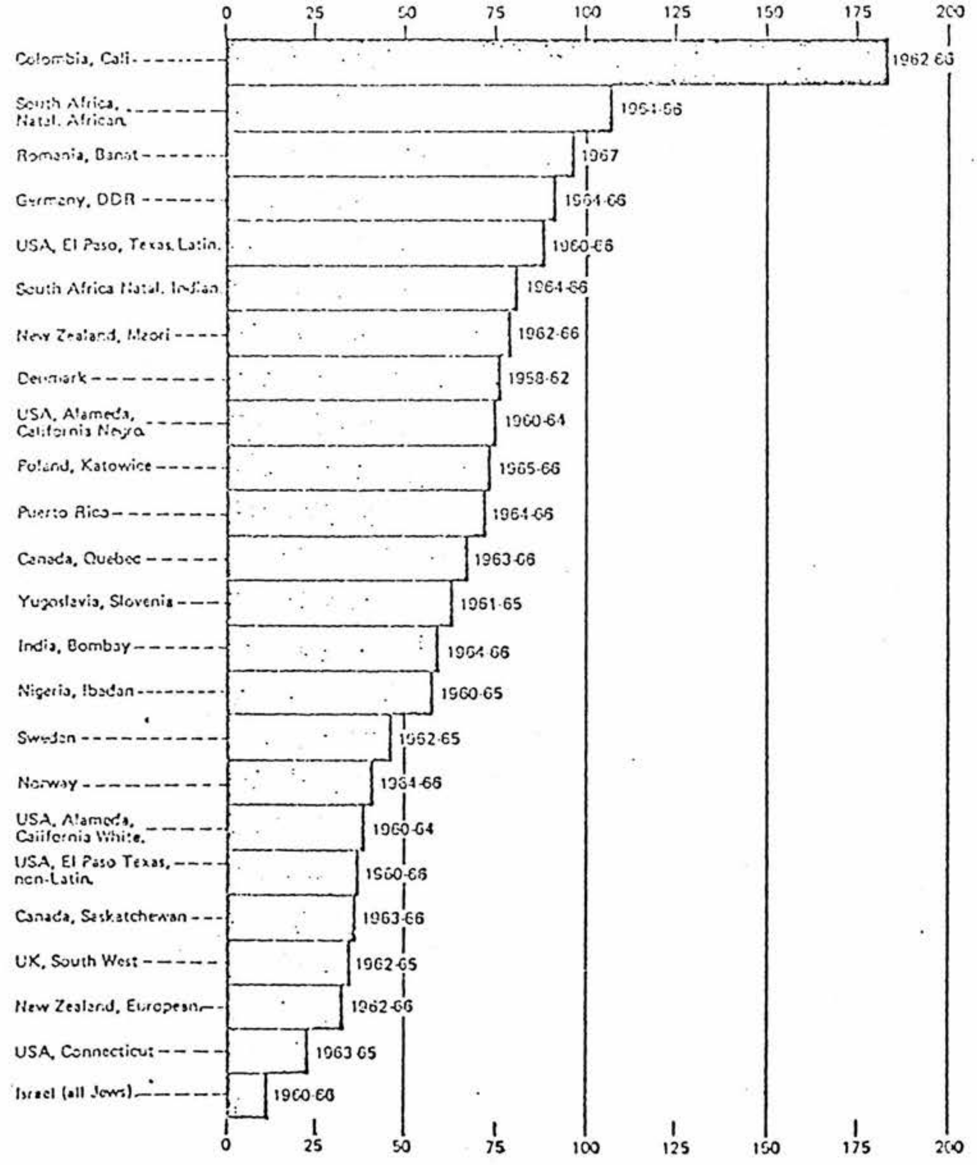
Country	Mortality*
Yugoslavia	24.0
Czechoslovakia	24.8
Portugal	25.4
Japan	25.9
Hong Kong	26.9
Italy	26.9
West Germany	27.1
Singapore	28.8
Panama	28.9
Taiwan	33.8
Poland	35.2
Denmark	35.5
Hungary	35.5
Mauritius	35.7
Austria	36.3
Mexico	39.1
Chile	43.7
Romania	45.5

* Age standardised rates per 100,000 women aged 35 to 64

Source : Canadian Task Force, 1976

FIGURE 2.1

Incidence of Carcinoma of the Cervix - International Comparisons



Age Standardised Rates per 100,000 women aged 35 to 64 from selected registries, some of which may include Carcinoma in Situ
Source : Canadian Task Force, 1976

CHAPTER 2

REVIEW OF THE LITERATURE

EPIDEMIOLOGICAL CONSIDERATIONS OF CERVICAL CANCER

In this chapter the epidemiology of cervical cancer is addressed in terms of the ability to identify high risk women, the development of the disease particularly identification of pre-malignant changes, and the progression and regression of the condition.

Epidemiology of Carcinoma of the Cervix

In the mid 19th Century Rigoni Stern investigated the frequency of marriage in relation to risk of uterine cancer and concluded on the basis of mortality studies that uterine cancer became prevalent between ages 30 and 40, is more common in married than unmarried women, and virtually absent among nuns. A century later Gagnon substantiated this work in studies on nuns. (Canadian Task Force, 1976).

International comparisons in the incidence and mortality from carcinoma of the cervix are shown in Figure 2.1 and Table 2.1. These figures are now some years out of date, but clearly demonstrate wide differences between different climates and cultures. Incidence varies from

12 per 100,000 women aged 35 to 64 in Israel to 180 in Columbia. Even within countries wide variations have been demonstrated.

The figures need to be interpreted with caution due to differences in the coverage of cancer and death registries and the histological definitions and the part of the uterus called cervix. Figures for carcinoma of the uterus are used for mortality to ensure comparability between countries, some of which do not record cervix separately. Even so one must conclude that there are real and substantial differences between countries which might be explained by socio-economic, cultural and environmental factors.

England and Wales and Scotland came half-way up the league table, with 20.7 and 21.2 deaths per 100,000 respectively for women aged 35-64 (1965-69).

Overall mortality from cervical cancer in England and Wales is declining, but these statistics conceal an increase in mortality at young ages. Generations born since 1940 have been experiencing ever increasing mortality rates from this malignancy (Cook & Draper, 1984), and Beral & Booth, (1986) have predicted that there will be a reversal of the downward trend unless screening services take this into account.

There have been a number of studies of the epidemiology of cervical cancer. It has been shown that there is a higher incidence in urban than rural residents; in people of low social class compared with high; in United States Negroes compared with whites; in married women compared with single; in widowed and divorced women compared with married; in women with many pregnancies compared with few or none; in women with young age at first marriage, compared with those who marry older; in women with young age at first pregnancy, compared with those whose first pregnancy is late; in those who have first intercourse in adolescence, compared with those whose first intercourse is after adolescence; in people with a history of syphilis or gonorrhoea, and in those with a number of or several partners, compared with those with only one partner (Canadian Task Force, 1976).

Some of these variables are highly correlated, e.g. age at first marriage and age at first pregnancy; number of sexual partners and likelihood of developing sexually transmitted disease. More recent studies have shown that women who have a human papillomavirus infection have a relative risk of 15.6 of developing carcinoma in situ within 6 years, indeed women under the age of 25 have an even higher relative risk of 38.7 (Mitchell et al, 1986). Women taking the oral contraceptive have a higher incidence of invasive cervical cancer, carcinoma in situ and dysplasia when compared with users of the intra-uterine contraceptive device (Vessey et al, 1983); the evidence does not necessarily suggest the oral contraceptive is a causative factor, but rather that the apparent difference is possibly related to increased sexual experience and partners, particularly at a younger age amongst the oral contraceptive users. Current cigarette smoking is associated with a relative risk of 1.76 for cervical intraepithelial neoplasia (CIN) and 1.69 for invasive carcinoma, risk increases with the number of cigarettes smoked and starting to smoke at a younger age (La Vecchia et al, 1986; Harris et al, 1980).

These latest findings are all confounded by the risk factors already known including indicators for socio-economic status and sexual habits, even so they have been shown to have an independent effect. Conversely it is possible that cervical cancer in women in the previously mentioned risk groups may be attributable to viral infection or smoking.

In conclusion, within the population of this country whose relative risk is lower than a number of countries, there are likely to be identifiable groups of women with characteristics which increase their risk of developing cervical cancer, particularly younger women, urban residents, women of lower social class, and married, multiparous women, women whose sexual experience began at a younger age, those who have had several partners and who have had sexually transmitted diseases, and lastly, women who smoke. Whilst these factors have been identified, no one has tried to pull them together to predict the relative risk of combinationsof factors.

Cytological Abnormalities

The term 'dyskaryosis' was adopted by Papanicolaou (1949) who distinguished several types of dyskaryosis - superficial, intermediate and parabasal. More recently dyskaryosis has been divided into mild, moderate and severe (Spriggs et al, 1978).

Severe dyskaryosis is seen in a smear from a cervix with a histological lesion of severe dysplasia or carcinoma in situ. Smears from invasive carcinoma of the cervix have particular characteristics.

The term 'positive' smear is used to refer to parabasal cell (severe) dyskaryosis and carcinoma. Mild and moderate dyskaryosis may sometimes be referred to as positive. A 'negative' report clearly means there is <u>no</u> evidence of dyskaryosis or neoplasia, and includes inflammatory conditions of the cervix.

Histological Findings

Cervical intraepithelial abnormalities are graded as follows:-

CIN 1 - mild dysplasia

CIN 2 - moderate dysplasia

CIN 3 - severe dysplasia and carcinoma in situ

The histological criteria for carcinoma in situ are as follows:-

1. Loss of normal stratification and polarity.
2. Squamous cells varying in size and shape, increased nucleo - cytoplasmic ratio.
3. Frequent mitotic figures, often bizarre.
4. Absent or incomplete differentiation.
5. Complete replacement of the epithelium by these changes.

Two types of cervical carcinoma can be identified:-

i) Squamous cell carcinoma - arising in the transformation zone. This constitutes 95% of cases.

ii) Adenocarcinoma - arising from the endocervical columnar cells, 5% of cases.

Survival from carcinoma of cervix is 100% if treated in the early stages, but once even local invasion has occurred, the 5 year survival rates begin to fall, to 75% at Stage IIa, 55% at IIb, 35% at III and less then 15% at Stage IV (Llewellyn - Jones, 1978).

Transition from Dysplasia to Carcinoma in Situ

Many series have been described, quoting progression rates from dysplasia to carcinoma in situ ranging from 1.1% to 32.5% and regression rates between 20.2% and 50%. These studies involved women who had undergone biopsy, and it has been suggested that any interference other than cytology is likely to change the course of events (Barron and Richart, 1969).

Studies of natural progression are fewer, and indicate progression in 2.5% to 60%, and regression in 0% to 36% (Lerch et al, 1963; Fox, 1967; Kinlen and Spriggs, 1978). Richart and Barron (1969) attempted to assess the probability of progression and regression, estimating that by the ninth follow-up smear, only 28.3% were still in the same class as at admission. One class of smear is more likely to progress to the next highest class, than to skip a class.

Burghardt (1973) summarised how dysplasia was seen as a preliminary stage, with gradual transformation to malignancy. The average duration of the intra-epithelial phase has been variously estimated to be between 6 and 20 years (Langley and Crompton, 1973); although more rapid progression in some cases has been described (Ashley, 1966; Fidler and Boyd, 1960; De Brux and Dupre-Froment, 1965; Liu, 1967) it is argued that cases apparently more rapidly progressive represent an older unscreened population (Lancet, 1981).

Dysplasia and carcinoma in situ have been shown to behave similarly as regards progression and regression, and biologically (Koss 1978). Patients with dysplasia are 160 times more likely to develop carcinoma in situ than patients free of disease (Stern and Neely, 1963).

There is no way of distinguishing those women whose lesion will progress, from those who are stable or will regress. It is therefore important that all patients with abnormal cytology should be further evaluated. A first abnormal smear identifies patients requiring regular follow-up (Evans et al, 1981). The written report provides a guide to the likely pathology, and this will influence subsequent management. If the initial smear is inadequate, a second smear is mandatory, firstly to reduce errors relating to sampling, and secondly to identify the rare cases where slides have been mixed in the laboratory. If an infection is present an accurate diagnosis may be possible only when this has been treated. Subsequent management will also depend on history and examination, both gynaecological and general (Gordon, 1981).

Mild and moderate dyskaryosis may not require immediate action, with only a minority likely to persist or progress (Evans et al, 1981); Armstrong estimated a 14% cumulative probabilty of progression into the biopsy category, (1980). The cytological findings may however indicate more extensive disease, and others have recommended further investigation (Soutter et al, 1984).

Cytological changes of a severe degree require a histological diagnosis in the first instance (Gordon, 1981). Until recently the commonest diagnostic procedure has been cone biopsy under general anaesthetic. Cone biopsy however, has many disadvantages, and recently has widely been replaced by selective biopsy under colposcopic vision.

CIN 1 and 2 occur mostly on the visible ectocervix, allowing safe treatment by cryosurgery, electrodiathermy or Carbon Dioxide laser as an outpatient. CIN 3 may be treated by these methods if accessible and not too extensive; 80% can be treated by locally destructive techniques. The remainder need to be treated by cone biopsy; residual intraepithelial neoplasia may be found in from 5% to 50% of cases (Coppleson, 1976, Townsend,

1977) and is evident on examination of the surgical specimen. The patient may then require repeat conisation or hysterectomy.

Micro-invasive carcinoma (Stage Ia) may be treated by hysterectomy, otherwise it is usual to treat invasive carcinoma by radiotherapy, the treatment course tailored to the Stage of disease. Some centres treat with chemotherapy in addition.

CHAPTER 3

REVIEW OF THE LITERATURE

CERVICAL CYTOLOGY - SCREENING PROGRAMMES

This chapter looks at the development of screening programmes for cervical cancer in other countries, and seeks to determine the characteristics which have been responsible for their success in terms of mortality reduction in certain countries. It then goes on to discuss the requirements for development of a programme in this country which would achieve the DHSS objectives for population screening, with particular reference to the development of a register from which to run such a programme. Finally this chapter discusses participation within screening programmes, and the importance of health beliefs and attitudes in influencing an individual's action.

Philosophy of the Screening Process

Screening has been defined as 'the presumptive identification of an unrecognised disease or defect by the application of tests, examinations or other procedures which can be applied rapidly' (Canadian Task Force, 1976). Screening tests are applied to sort out those apparently well persons who probably have a disease from those who probably do not. Mass screening is conducted on the whole population, or a major sub-group (e.g. adult females); selective screening is conducted on a segment of the population at relatively high risk. Risk may be defined by age, sex, family history, previous medical history, occupation, or other defined parameters established by prior epidemiological investigation to be predictors of high risk.

The condition being screened for should be an important health problem, and there should be an acceptable treatment for it. The natural history of the condition should be understood, and if there is a recognisable latent or early symptomatic stage, there should be a suitable and acceptable test and treatment for such a stage. Facilities should be available for full diagnosis and treatment in patients with a positive test; it would be unethical to detect a condition for which the treatment did not either improve the prognosis or the quality of life; treatment at this early stage must favourably influence the outcome. The cost of the programme, including that of treatment at an early stage, should not be excessive in relation to the benefits which accrue in respect of morbidity and mortality prevented and medical costs avoided.

The test itself must have a high sensitivity level, i.e. be able to give a positive finding when the person tested truly has the disease under study. Specificity is the ability of a test to give a negative finding when the person tested is free of disease. Low specificity will result in a high proportion of false positives. In malignant disease a highly sensitive test is necessary, and some reduction in specificity is acceptable in order to attain this.

Other criteria of screening tests include:-

i) Simplicity - the test should be easy to perform.

ii) Acceptability - the test should be acceptable to the subjects.

iii) Accuracy - the test should give a true measurement of the attribute under investigation.

iv) Precision - the test should give consistent results in repeated trials.

Problems in Conducting Screening Programmes

The development of a screening test for cervical cancer has been described earlier. This test satisfies the criteria of acceptability, validity and simplicity, but has been criticised for the widespread introduction of screening programmes with the lack of evaluative studies.

Many programme attenders are self-selected, and tend to belong to a health conscious group who would avoid exposure to risk factors. Screening of asymptomatic people tends to result in cases detected having a higher proportion of long term survivors. People with more advanced disease and with more rapidly progressive disease are likely to be symptomatic, and to present through different channels.

If a test detects a disease at an ealier stage in its natural history (lead time) the survival from time of diagnosis will inevitably be longer than if the disease had not been detected until symptoms developed. Assessment of the impact of screening can be difficult in a situation where there are improved methods of therapy or declining incidence of disease, and evaluation of the programme must take these factors into account.

It may be difficult to persuade people to attend for screening, increasingly so as the programme comes nearer to achieving complete population coverage. Migration patterns can interfere with the coverage achieved, particularly when immigrants are from an area where coverage has been less than optimal. Introduction of an effective screening programme for cervical cancer requires organisation according to an agreed policy. Essential elements of such a programme are:-

i) Identification of the target population.

ii) Identification of individual women.

iii) Availability of measures to guarantee high coverage and attendance.

iv) Adequate field facilities for taking smears, and adequate laboratory facilities to examine them.

v) Organisation of a quality control programme on taking smears and on interpreting them.

vi) Adequate facilities for diagnosis and for appropriate treatment of confirmed neoplastic lesions.

vii) A carefully designed and agreed referral system, and an agreed link between the woman, the laboratory and the clinical facility for diagnosis of an abnormal screening test, for the management of any abnormalities found and for the provision of information about screening tests.

viii) Evaluation and monitoring of the total programme in terms of incidence and mortality rates among those attending and those not attending at the level of the total target population (Hakama et al, 1985).

Screening Programmes in Other Countries

Since the 1940s screening programmes for cervical cancer have been introduced all over the world, notably in North America, the United Kingdom and Nordic countries. In some countries screening is part of normal gynaecological practice and women are encouraged to have a regular smear taken, once a year or sometimes less frequently. Other screening programmes are specifically designed to be independent within the health services.

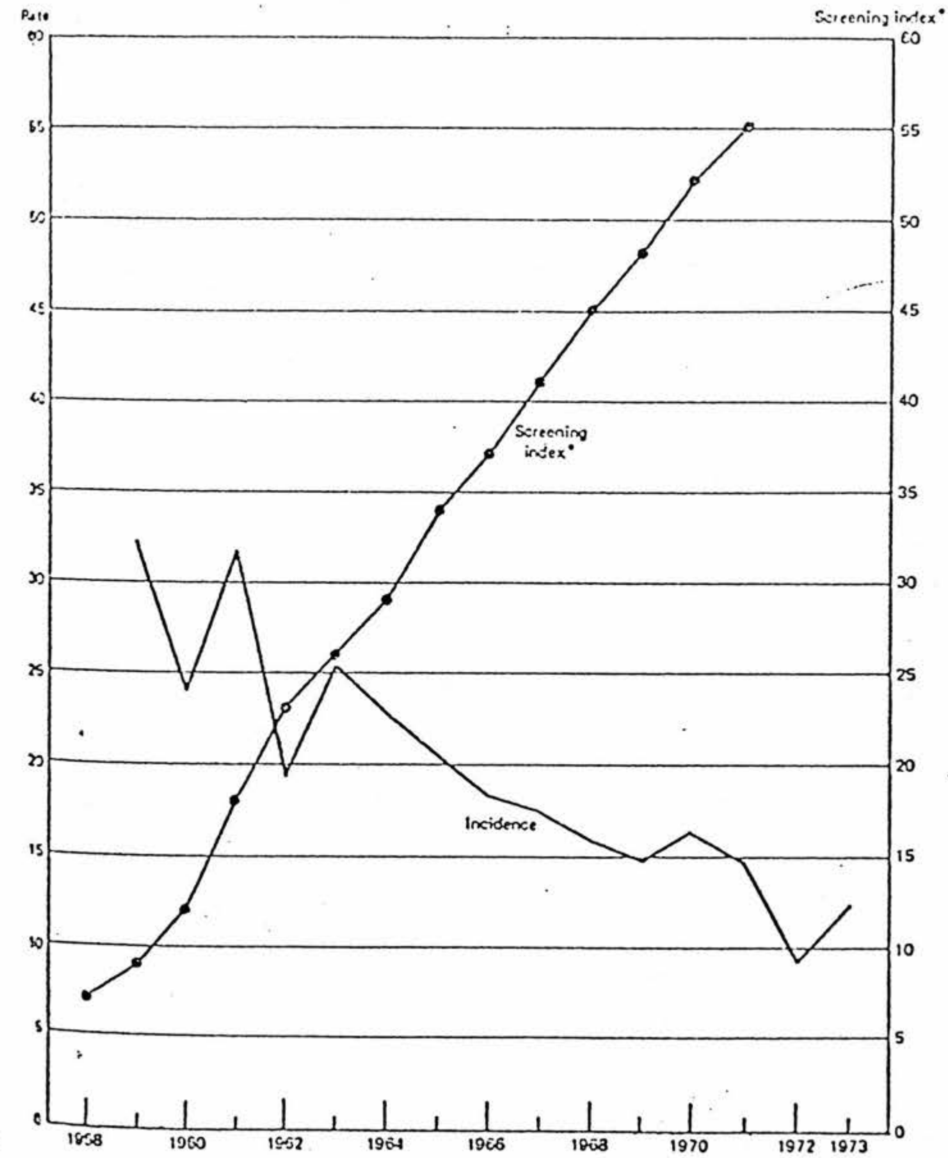
Programmes show wide variation in the mechanisms used to encourage participation, and screenees are informed of opportunities to have the test performed through mass communications systems. Other programmes are organised on a population basis with nationwide coverage, each woman being individually invited to participate according to a fixed schedule.

1. British Columbia

British Colombia had the first large scale screening programme, which originated as a diagnostic programme in the late 1940s. The programme began in 1949, and gradually expanded its activities to population screening in the 1950s. The programme relied on women requesting screening, or attending for contraceptive advice. Figures available to the Canadian Task Force in 1976 were based on

FIGURE 3.1

Incidence of Clinical Invasive Carcinoma of the Cervix and Extent of Screening, British Colombia, 1958-73

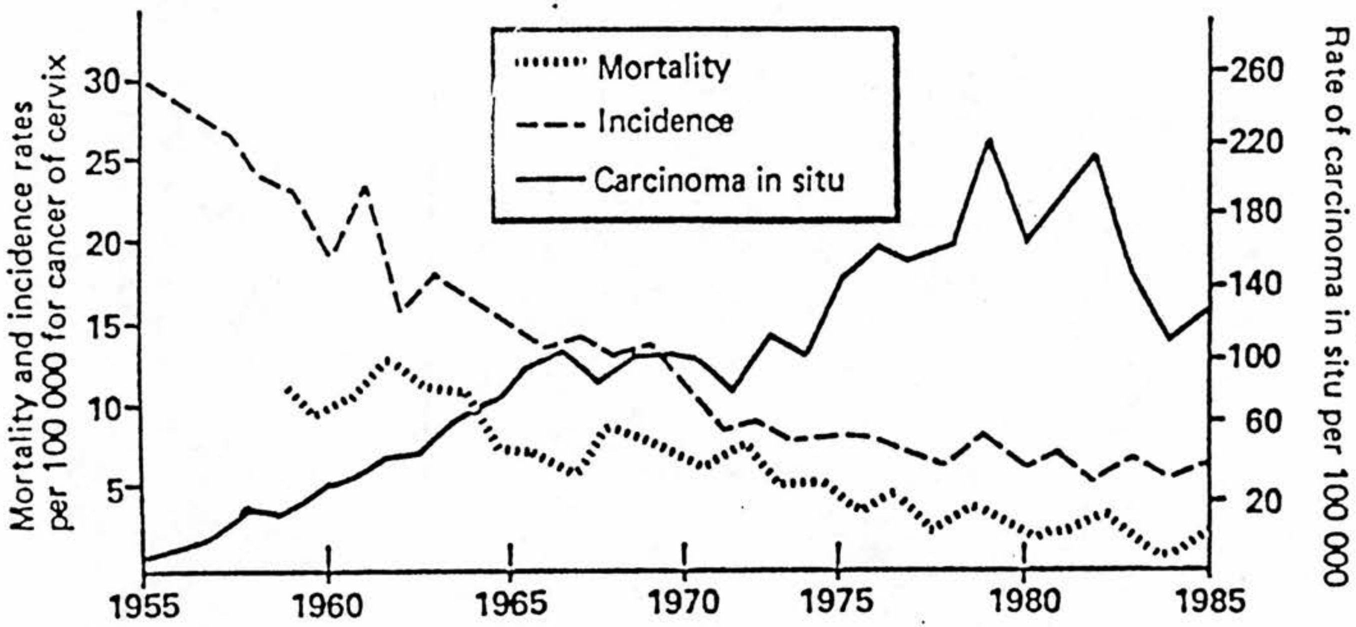


Age Standardised Rates per 100,000 women aged 35 to 64;

source: British Colombia Cancer Registry

Source: Candian Task Force, 1976

FIGURE 3.2



The incidence of clinical invasive squamous carcinoma of the cervix and squamous carcinoma in situ 1955-85 and mortality from squamous carcinoma of the cervix 1958-85 in British Columbia (age standardised rates per 100 000 women over age 20).

Source: Anderson et al (1988)

the number of cytological examinations as a proportion of the female population.

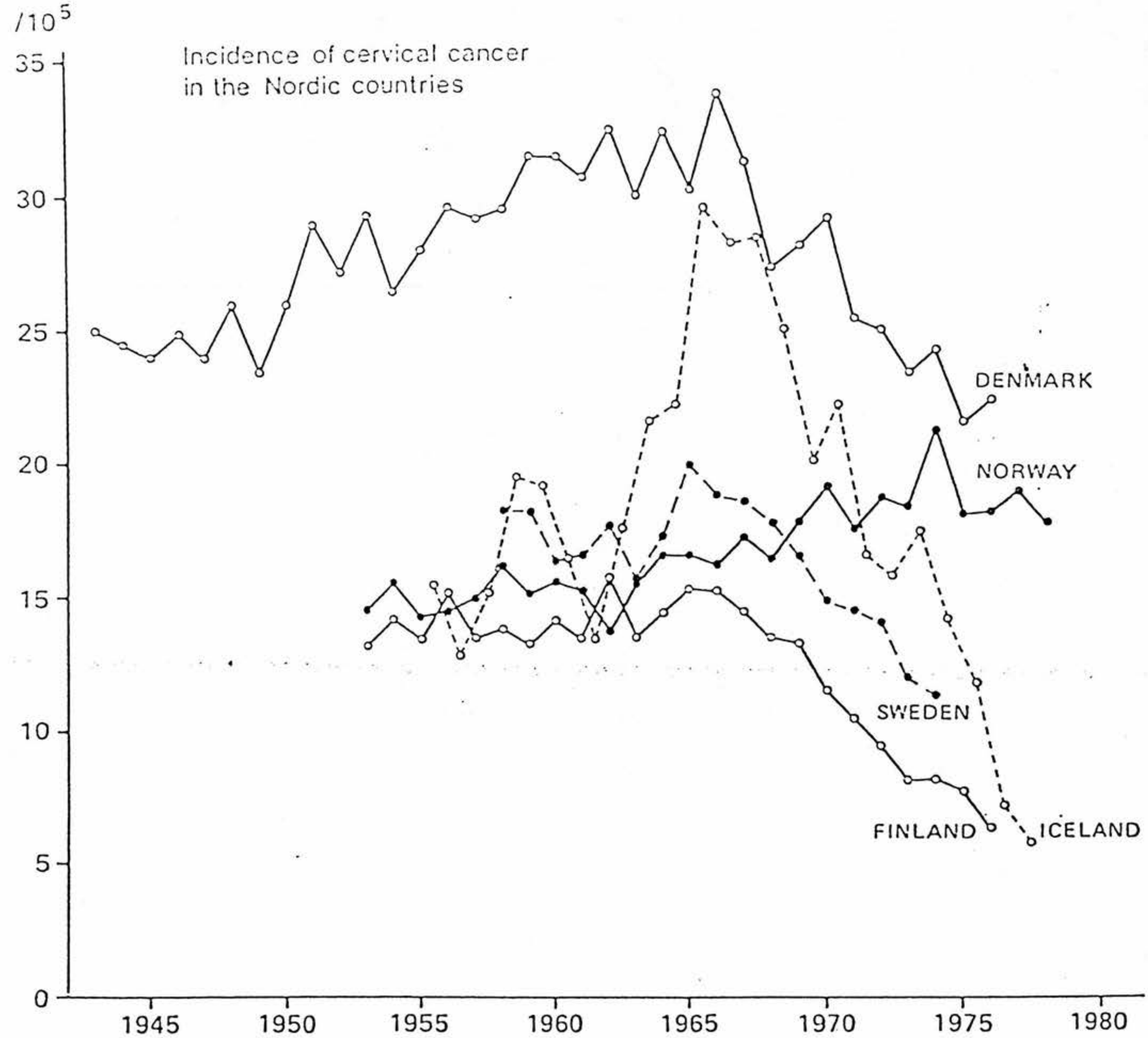
In 1970 27% of all examinations were first examinations, and it was estimated from the Central Registry that 80% or more of the eligible population had been screened at least once. Figures for the screened population were inflated by duplication of women changing their names through marriage, and by inaccurate recording (Canadian Task Force 1976). The incidence of mortality and clinical invasive carcinoma of the cervix has fallen steadily with increasing population coverage by screening (Fig 3.1 and Fig 3.2). It has since been estimated that by 1970 85% of the population had been screened at least once, and this level has since been maintained. Of those presenting with invasive cervical cancer in the last ten years, three quarters had not been screened (Anderson et al, 1988).

2. Finland

In Finland a population screening programme was organised by the Cancer Society of Finland in the early 1960s. A country wide mass screening registry was established in 1968. The programme aimed to screen all women aged 30-55 every fifth year. The women in the programme received a postal invitation; 4.2% of those invited did not attend, and 4.2% of attenders did not receive a personal invitation. The overall attendance rate has been 85%.

FIGURE 3.3

TRENDS IN INCIDENCE IN NORDIC COUNTRIES



Annual incidences of cervical cancer in the Nordic countries in 1943-1978.

Source: Hakama, 1982

It was estimated that the probability of developing a dysplasia of high degree or carcinoma in situ after the initial screening was 0.022. The incidence of invasive carcinoma was considerably higher in non-responders than in the screened population, with a relative risk of 1.6. For the total Finnish population between the ages of 30-59 the probability of developing a clinical cervical cancer, if all the population was covered at least once by the programme, is estimated to be 0.004, and with the continuance of the mass screening programme in Finland, a reduction of 58% would be expected in the risk of clinical cancer (Hakama & Rasanen-Virtanen, 1976).

The annual incidence of cervical cancer in Finland began to fall from 15/100,000 in the mid 1960s to 6/100,000 in 1975, and the overall risk for those aged 40-44 decreased to less than one third during a period of ten years (Fig. 3.3) (Hakama, 1982).

3. Iceland

Mass screening was introduced in Iceland in 1964, initially confined to women aged 25-59 living in Reykjavik and the immediate surrounding districts, but from 1969 extended to the entire country with an upper age limit of 70.

The aim was to examine every woman every 2-3 years. The programme was run by the Icelandic Cancer Society, and all smears were examined at one laboratory in Reykjavik. The screening centre received regular information from the Cancer Registry which has been in operation since 1954. Treatment also is centralised, and close co-operation between all departments is ensured. By 1974 screening covered 92-95% of women aged 30-39, and 88% of those aged 40-49.

Whilst there was little change in mortality in the older age groups, by 1974 there was a marked and highly significant decrease for women aged under 60; the average decrease for 25-59 year olds was more than two-fold. In 1970-74 the majority of deaths were in women who had never been screened; the mortality rate amongst screened women was much lower, with no cases in the first four years after the initial screen, and an overall rate of 2.61/100,000 compared with 23.49/100,000 in never screened women. The major difference in detection rates was seen in women with Stage II invasive disease or worse; overall there were 17.5/100,000 cases at Stage I in unscreened women in 1970-74, compared with an average of 13.6/100,000 over 10 years in screened women; there were 49.8/100,000 cases at Stage II or worse in unscreened women but only 2.2/100,000 in screened women over the same periods (Johannesson et al, 1978). Fig. 3.3 demonstrates the rise in incidence of invasive disease in Iceland prior to the introduction of screening, and the subsequent fall in comparison to trends in other Nordic countries.

4. Other Nordic Countries

The programme in Finland has already been described in detail. Sweden has a programme covering the entire country, with four-yearly screening of women aged 30-49 and 70% attendance. Denmark started screening in the early 1960s, but the process is decentralised with no common practice for the entire country. About 40% of the female population is covered by an organised programme with personal invitations, and recall every 3-5 years.

In Norway only one county has had an organised screening programme and there is no nationwide system for presymptomatic detection of cervical cancer. Fig. 3.3 demonstrates clearly the steady rise in incidence of cervical cancer in Norway compared to the reduction achieved in other Nordic countries where widespread screening has been in operation from the mid 1960s.

5. Scotland

Two areas of Scotland have also been covered by comprehensive screening programmes. A systematic approach to screening was introduced in Aberdeen (Grampian Region) in the early 1960s. Women on the lists of general practitioners were individually invited to attend for a smear. A high proportion of women, many aged 40 and over were screened, and subsequently re-screened on a five-yearly basis. Additional smears were taken at the time of pregnancy and during family planning sessions. In <u>Tayside</u> clinics were established in various parts of the city of Dundee, and women were contacted also at their place of work where they could be screened. Initial coverage contained a higher proportion of younger women than in the Grampian region, and systematic screening began nearly a decade later. Comparison of figures from Grampian and Tayside with those of the rest of Scotland, England and Wales in 1978 (MacGregor & Teper, 1978) demonstrated a lower death rate in these two areas with established screening programmes than in the rest of the country.

Screening in England and Wales

Since the introduction of cervical cytology in the middle of this century, and the British Medical Journal editorial (1963) recommending population screening in the country, no less than seven different policies have been introduced:

i) The original policy introduced by the Ministry of Health in 1966 (HM(66)76) was for the screening of women aged 35 and over at five-yearly intervals, with no upper age limit.

ii) In 1973 the provision for commencing screening after a third pregnancy was added.

iii) The British Society for Clinical Cytology made new proposals in 1977 (Spriggs & Hussain, 1977):

- Start screening at 25 during any consultation for contraception, pregnancy or venereal disease.

- Any sexually active women who has not been screened should have a first smear at 30.

- Five-yearly tests until age 70.

iv) As (iii) with screening at three-yearly intervals in those aged over 35 if resources permit.

v) The policy recommended by the Committee on Gynaecological Cytology in 1982 (Draper, 1982) is as follows:-

Smears should be taken at ages 35, 40, 45, 50, 55, 60, 65 and also:

- early in the course of each pregnancy.

- at age 22, or the next visit thereafter, for women attending for family planning advice, and who have not previously been screened.

- at age 30, for women attending for family planning advice, and who have not had a smear during the previous five years.

- any other woman aged between 22 and 35 who is, or has been sexually active should be screened on one occasion in this age interval if she requests a test.

vi) Screening of attenders at Genito Urinary Medicine and Gynaecology clinics was added to (v).

vii) The advice given by the Committee on Gynaecological Cytology has recently been revised (HC(84)17; Lancet, 1984(b)). Emphasis is placed on screening those aged over 35, and those with 3 or more pregnancies, at five-yearly intervals. Previously unscreened women should be regarded as the highest priority. Screening should start at the first presentation for contraceptive advice, or on request, for all sexually active women, and should be repeated at the ages of 20, 25, 30 and 35 and not on any other occasion, except that every woman should be screened early in every pregnancy. Screening may cease at the age of 65 provided there have been two consecutive negative smears.

FIGURE 3.4

HMR 101/5 (1982)

01 PATIENT'S HOSPITAL OR CLINIC CASE REFERENCE NO.

10 NAME AND ADDRESS (TOWN) OF LABORATORY

Fold

11 SLIDE SERIAL NO.

02
SURNAME ____ MAIDEN NAME ____
FIRST NAMES ____
FULL POSTAL ADDRESS ____

03
A
NAME AND ADDRESS OF SENDER IF NOT GP

IF HOSPITAL STATE:–
____ CONSULTANT
____ WARD
____ HOSPITAL

Fold for B

04 DATE OF BIRTH *Fold for A*

DAY	MONTH	YEAR

05 NHS NO.

06 SOURCE OF SMEAR
GP 1 HOSPITAL 4
AHA 2 Other 5
FP CLINIC 3

07 HUSBAND'S OCCUPATION (patient's if unmarried) also state if Manager, Foreman or other

08
B
NAME AND ADDRESS OF GP

WRITE FIRMLY WITH BALLPOINT PEN ON A HARD SURFACE OR BACK COPY WILL BE ILLEGIBLE.

ENTER DETAILS IN BOXES OR RING APPROPRIATE NUMBERS

TB/Bn 56-2881-328 8/82

09 SPECIMEN TYPE	Cervical scrape 1	Vaginal sample 2	Cyto pipette 4	Other (specify) 8	LOCAL CODES	26	27	28	29	30

Request/Report/Recall Form for Cervical or Vaginal Cytology— GP's COPY

12 MARITAL STATE
Single 1
Married 2
Widowed/ Divorced 3

13 PREGNANCIES
Total births (live and still) ☐
Total of abortions and miscarriages ☐

14 CONDITION
Pregnant 1
Post-natal (under 12 weeks) 2
IUCD fitted 16
On oral contraceptive 4
On other hormones (specify in Box 21) 8

DATE OF	DAY	MTH.	YR.
15 THIS TEST			
16 LMP (1st day)			
17 LAST TEST			
18 NO PREVIOUS TEST (put x)			

19 SYMPTOMS
Discharge 1
Post-coital bleeding 2
Inter-menstrual bleeding 4
Post-menopausal bleeding 8
Other symptoms 16 (Specify in Box 21)

20 APPEARANCE OF CERVIX
Normal 1
Eroded 2
Cervicitis 4
Polyps 8
Malignant 16

21 CLINICAL DATA (PREVIOUS TREATMENT INCLUDING RADIO THERAPY/CHEMOTHERAPY)

Fold

signature

22 CYTOLOGY REPORT

Fold

23 EVIDENCE OF NEOPLASIA CYTOLOGICAL PATTERN SUGGESTS:-
Inadequate specimen 1
Negative 2
Mild dysplasia 3
Severe dysplasia/ carcinoma-in-situ 4
Carcinoma-in-situ/? invasive 5
? Glandular neoplasia 6

24 INFLAMMATION
Severe Inflammatory Change 1
Trichomonas 2
Candida 4
Viral 8

25 FURTHER INVESTIGATION SUGGESTED
Repeat smear in months 1
or after treatment 2
Colposcopy 16
Cervical biopsy 4
Uterine curettage 8

Signature date

Fold

A recent Health Circular (HC(88)1) has emphasised the need to direct particlar efforts at older women.

A national scheme for screening women in England and Wales was introduced in 1967. It was recognised that a negative result on a single occasion would not ensure freedom from the disease for life, and a system was devised whereby women could be recalled at appropriate intervals with the help of the National Health Service Central Register at Southport. Laboratories were asked to send one copy of the national cytology report/request form HMR 101/5 (Fig. 3.4) for each woman found to be negative to the National Health Service Central Register. These forms, containing standard identification information, were the starting point of the recall system. The system was entirely manual, and relied on the physical transfer of the form at all stages to transmit information.

Recall was recommended at five-yearly intervals, and was aimed at women aged 35 and over and, since April 1973, at younger women who had had three or more pregnancies. Initially some areas operated their own local recall schemes, many of them recalling at three rather than five-yearly intervals and including women under 35. These schemes had mostly been integrated into the national scheme by 1974, the advantage of the latter being that it provided a means by which women who moved to another part of the country could be traced (Allman et al, 1974).

HMR 101/5 forms were stored at Southport for five years, and then, after checking against the central register, forwarded to the relevant Family Practitioner Committee (FPC). Subsequent practice differed according to Health Authority. The Derbyshire FPC forwarded forms to the North and South Districts as appropriate, who arranged for invitations to be sent to the individual women. In Cambridge the practice was for the FPC to enquire of the woman's General Practitioner (GP) if recall was required; some GPs took the responsibility themselves whilst in most cases the same forms were sent to the Community Health Services who reminded women that a repeat smear was due (Pye, 1984).

The system had no means of updating for women who had been rescreened ahead of their recall date; indeed women who had been rescreened annually might eventually generate an annual recall. There was no local mechanism for identifying and following up non-responders. A pilot study carried out in the early days of the national scheme found that 33% of women responded within 8 weeks of receiving a recall letter, and that 85% of those refusing a repeat test (19% of those recalled) did so because they had already had a repeat test. Working class women were less likely to respond than those in non-manual occupations, and women with four or more children were less likely to respond than those of lower parity. More of the refusers had their original smear taken in family planning or industrial clinics, possibly indicating that they were having regular repeat smears done at the original clinic (Allman et al, 1974).

An evaluation of response to the national recall scheme in Cambridgeshire estimated that 5-10% of recalls were declined by GPs and that at least a third of GPs did not reply. Patients belonging to the latter were included with the positive replies. A reply was received to almost a quarter of the recall letters sent by the Community Health Services; from these replies it was apparent that it was inappropriate to contact at least 24%. 16% of women had already been screened or made arrangements for a test, and 1% had undergone a hysterectomy. Despite record checking by the Central Register at Southport, the FPC and GPs own records, over 6% of recall letters were returned not known at that address. The overall response rate to recall was estimated to be 18% (Pye, 1984).

Doubts have been expressed about the effectiveness of the national screening programme in this country. Registration data have been used to estimate the patterns of disease which might have occurred in the absence of screening; these indicate that screening has probably led to a substantial reduction in the number of clinical cases in women aged 35-54, but has had little effect over the age of 60 where virtually no screening has been performed

(Parkin et al, 1985). The majority of cases are over 40 years of age and most of these have not had a recent smear (Chisholm & Haran, 1984); the mean age of death from cervical cancer is 59 (West, 1977), and between 75 and 90% of women dying from this disease have never had a cervical smear (Paterson et al, 1984; MacGregor & Teper, 1978; Anderson et al, 1988).

Mortality has increased among younger women recently, although absolute numbers are still small (Cook & Draper, 1984). There has also been an increase both in the proportion and the absolute number of younger women with invasive cancer (Chisholm & Haran, 1984). It has been postulated that progression from a negative smear to invasive cancer occurs more rapidly in younger women than in older ones (Paterson et al, 1984), although no data are presented to support this. It has been suggested that the increase in registration rates amongst younger women is accounted for by increases in the number of smears examined, and changes in the completeness of registration, but it is clear that there has been a true increase in the incidence of carcinoma in situ (Draper & Cook, 1983).

There is a more favourable stage distribution, and fewer deaths amongst women who have had a previous negative smear (Paterson et al, 1984). Compared with women who have never been screened, it has been estimated that the relative risk (RR) for invasive cancer is 0.44 (95%

confidence interval (CI)=0.24-0.80) for those who have had one smear, and 0.20 (95% CI=0.13-0.32) for those who have been screened on two or more occasions (La Vecchia et al, 1984). Protection appears to be mainly related to the interval since the last smear (Moss et al, 1985), and it has been estimated that 64% of invasive cancers could be prevented by screening at intervals of more than five years, an additional 18% by reducing the interval to 3-5 years, and a further 8% to less than three years (La Vecchia et al, 1984).

Age and Frequency of Screening

The recommendations of various national bodies concerning ages and frequencies for screening vary considerably. Computer simulation models have been used to calculate the optimal ages, the first being that described by Knox (1976) who found that relatively high rates of screening should be employed in women over the age of 45, and that routine screening under 30 is unlikely to be effective in reducing mortality. Parkin and Moss (1986) echo Knox's conclusion that concentration of screening at younger ages leads to high costs for relatively small gains in outcome; the absolute benefits from a programme of five-yearly testing from age 25 are only slightly inferior to those achieved by more complex policies, and is more efficient. It is more beneficial in terms of deaths prevented to achieve a higher population coverage, i.e. to ensure that at least 80% of women respond to five-yearly recall, than to increase the frequency from five-yearly to three-yearly with a 50% response to recall (Parkin & Moss, 1985).

The principal reason for choosing a five-yearly rescreening interval in this country is one of cost. Clinicians, whose priority is to do the best for the individual patient, would prefer to recommend a shorter screening interval, as suggested by Paterson et al (1984), but even a one-yearly screening programme will miss some fast growing squamous cell carcinomas and adenocarcinomas. Health authorities are responsible to the whole population which they serve, and from the public health point of view it is preferable to run a five-yearly programme which reaches a high proportion of the population. Recent DHSS guidelines are that the proportion of women screened regularly should take precedence over increasing the frequency of screening (HC(88)1).

The national recall scheme was disbanded in 1981, and health authorities were asked to set up local recall arrangements by 1st April, 1983 (HC(81)14), and have since been requested to ensure that those at greatest risk are tested at five-yearly intervals (HC(84)17) and by 31st March 1988 all District Health Authorities should have implemented computerised call and recall systems (HC(88)1). DHSS recommendations in 1984 were that the following groups of women should be included in the screening programme:

i) Women aged 35 and over.

ii) Women who have been pregnant on three or more occasions.

iii) All sexually active women.

iv) Women who are pregnant, and those who require a smear for clinical reasons.

The DHSS requested that screening of younger women should be rationalised; at present 55% of all smears are from women aged under 35. Screening may cease at the age of 65, provided there have been two consecutive negative smears. Priority should be given to those women over 35 who have never been screened.

Family Practitioner Committee Based Computerised Systems

Calls were made for a national computer system which could link up with laboratories, from which women could be identified and found even when they had moved from one area to another (British Journal of Family Planning, 1984). The Exeter Family Practitioner Services Unit responded by producing a cytology programme which will run on the standard hardware used by Family Practitioner Committees (FPCs) based on the FPC register. This programme provides a recall and call system which is programmable for ages and frequency of recall and call, and which can be variable between districts within the FPC area, and between smear category, i.e. if a smear result is abnormal the woman can be recalled at a set interval. Lists of women due for recall are produced, and also there is the facility for production of non-responder lists at predetermined intervals. This system can only work efficiently if cytology information for the five years preceding installation of the programme is entered into the computer data bank, with regular updating of information.

Computerisation of FPCs is progressing such that all hope to have installed the necessary equipment by April 1988. This will enable progression to the next step, transfer of information between FPCs. Laboratory links have been established in a few districts, enabling direct inputting of all, or solely the abnormal cytology information, and access of cytology histories where this information is relevant. The ultimate goal in using the FPC register is the development of a community index (Arthur Andersen & Co., 1984). Patients would be uniquely identifiable, there would be a minimum set of information held on the index, and it would be capable of linkage to other systems e.g. the district Master Patient Index. Such information technology raises the problem of confidentiality of information, and it would be necessary to ensure that sensitive information was protected.

Much attention has focussed on FPC based recall and call schemes, but the general practitioner (GP) is well placed to encourage the higher risk group of women to have cervical smears. GPs receive an incentive payment for screening women over the age of 35, or who have had three or more pregnancies, once every five years. In 1980 GPs in Birmingham and Newcastle claimed for only 13 cervical smears per 1,000 women; 10% were likely to have been useless because of poor technique (Journal of the Royal College of General Practitioners, 1982). GPs were recommended to use the age/sex register, with the additions of social class and parity designations. Such a system would place the responsibility for cervical screening on the GP, requiring alteration of attitudes in some doctors, assistance in providing age/sex registers, and possibly a review of the payment system (Journal of the Royal College of General Practitioners, 1982).

Opportunistic screening in general practice has not been shown to confer any benefit (Fleming et al, 1985), but patients presenting who need to be screened should indeed be offered the opportunity, and the practice should have a system of finding and inviting those who are missed.

The Arthur Andersen Report (1984) recommended computerisation of practices, with links to the FPC computer enabling a flow of information. The FPC would be in an ideal position to provide practices with age/sex registers, and the two way flow of information would enable both FPCs and GPs to maintain the accuracy of their records. Basing the cytology recall and call system within general practice has the advantage that information such as past screening details, treatment information, details of hysterectomies, and relevant social information can be utilised. A compliance rate as high as 91% has been achieved in this setting (Richards, 1985).

Use of Registers for Recall and Call Systems

The success of recall and call systems based on a register depends on the the ability of the register to identify the 'at risk' population. This depends on the completeness of population coverage by the register being used. The FPC medical register is a register of all persons registered with each individual GP who is in contract with the FPC, and resident in that FPC area. In practice it can only be used as an age/sex sampling frame if the register is computerised. A practice based age/sex register, although in general not computerised, is a more accessible tool, being based on a smaller unit.

The accuracy of these registers can never be 100% because of delay in registering with a new practice after moving house, delay in forwarding details to the FPC (this aspect may be expedited if the Arthur Andersen Report is fully implemented), some patients remaining on a practice list despite having moved to a new area, or death. Inflation of the practice age/sex register is more likely than deflation because new patients can be added as they register, and the time interval between leaving a practice and registering with a new one is much shorter than that between leaving a practice and the practice becoming aware of the fact (Fraser, 1982).

Age/sex registers, practice medical records and FPC registers have been shown to exhibit similar levels of accuracy for patient names, sex and age, but the distribution of wrong addresses varies greatly - practice medical records 3.9%, age/sex registers 8.2% and FPC registers 17.1%. The register population inflation rates were FPC records 5.5%, practice records 9.8% and age/sex registers 10.6%, but there were large differences between individual practices (Fraser & Clayton, 1981). Factors associated with inter-practice variation in accuracy of the age/sex register include the situation in an inner city renewal area and a large proportion of patients in the 20-40 age group (Sheldon et al, 1984).

Prevalence of an age/sex register in general practice has been estimated to be 52% (+ 5% for 95% confidence) of all practices. Another 14% are likely to be planning to institute one. Practices without an age/sex register thought it would be too time consuming. Most practices that had one used it for research, disease recording, screening, surveillance or health education (Cooper, 1985). Family practitioner staff work on much greater numbers of patients than do general practitioners, and may find it difficult to maintain the motivation for achieving the accuracy that has been achieved by enthusiastic practitioners (Difford et al, 1985).

Relating call for cervical screening to risk factors is likely to be hampered by the low frequency of recording of many items by GPs. Occupation was recorded in 42% of patient records, and was higher for men. A "worst first" bias has been suggested, whereby patients with a disease or stigma might preferentially have certain risk factors recorded (Mant & Phillips, 1986). The Royal Commission on the National Health Service (1979), the Black Report (DHSS, 1980), the Royal College of General Practitioners' Survey of Primary Health Care in London (Jarman, 1981), and the Acheson Report (London Health Planning Consortium, 1981), have drawn attention to large geographical variations in problems dealt with by primary care services and also to variations in the characteristics of these services from one area to another.

Jarman (1983) described a method whereby census data can be used to define areas with a higher than average concentration of social factors, weighted by the degree to which these factors increase the GPs' workload or pressure on services. The information has been used to develop an underprivileged area index (Jarman, 1984); validation of the scores using the incidence of mortality from diseases amenable to intervention, and the incidence of two diseases where general practice intervention is important concludes that the score is likely to reflect the need for general practitioner services (Charlton & Lakhani, 1985). Application of the scores to Manchester however found that the areas which scored worst on the underpriviledged area index were those in which the doctor:patient ratios were highest (Leavey & Wood, 1985).

Difford (1985) has described a method for charting the incidence and prevalence of morbidity by practice. By the use of post codes, information relating to the practice population was aggregated into areas and displayed graphically. This information would need to be related to population data such as small area statistics to enable calculation of the representativeness of the practice population. Aggregation of practice population data collected in this manner could provide the community physician with screening coverage in each age group related to socio-economic variables, and to the incidence and prevalence of pre-invasive and invasive disease.

The lower social classes are less likely to make use of preventive health care facilities. Limited contact with those likely to have had relevant health experience means there is little peer group influence in preventive measures. There is a tendency to accept an uncomfortable life, and to suppress illness as a result of stoicism to which they are brought up. Whilst women from the upper end of the social scale acquire their information from the mass media and printed matter, those at the lower end of the social scale rely on personal contact and the spoken word. The personal word of the doctor is an important source of health information, and often women having a smear do not receive enough explanation of the purpose, and the need for regular re-examination (Wakefield, 1976).

Those who "choose" to have a first test are aware of the need for regular smears, whilst those who come by their first test "by chance" are less well informed and need special attention (Wakefield, 1976). Amongst women attending for a cervical smear in Norway and in the North West of England, those married to semi-skilled and unskilled workers were under-represented, and those from professional and managerial classes were over-represented; non attenders were more likely to be those with little education, doing unskilled work, or married to men doing unskilled work.

Participation in Screening Programmes

Those accepting screening for the first time are more likely to be young, currently married, better educated, in a higher income group, with a husband in a professional occupation. Unscreened women have been found to be older, less likely to be currently married, in the lowest income groups, either childless or having four or more children. The most important factor in unscreened women is poverty; non-metropolitan women are less likely to have been screened than metropolitan, and black women are less likely than white. Black women are unlikely to be screened whatever the combination of age, residence and income (Hendershot, 1981; Kleinman & Kopstein, 1981).

Those accepting invitations for screening are those who make use of other preventive services (Hobbs et al, 1980). They are more likely to be church attenders, and to be those who take preventive measures - those who have stopped smoking, wear a seat belt, and attend for screening, chest x-ray and dental checks. One study showed that non-participants in screening programmes have a higher prevalence of chronic disease, and a higher mortality than participants (Wilhelmsen et al, 1976), whilst others have shown that refusers are those who feel healthier, are less likely to have been ill in the past two years, or to have consulted a physician when they were ill. They suffer less gynaecological symptoms, and are less likely to know the danger signals of cancer or to have had friends with cancer, and hold less favourable attitudes to health and preventive care (Naguib et al, 1968; Kauppinen et al, 1970; Vuori, 1972).

Women responding to recall for cervical cytology are more likely to be in the lower social classes, housewives rather than working wives, and those whose first smear was taken in a local authority clinic rather than an industrial clinic. Responders are likely to seek to repeat a familiar experience by returning to the same type of agency who took the first smear (Samson et al, 1975).

When surveyed fifteen years ago, many women did not know what a smear test was for. Older women were less likely to know where to go for a test, and of those who had heard of the test and not had one, reasons given for not having the test were mainly that they were not interested, or had no time. 70% of women said that fear and modesty prevented others from going for the test. When the test was thought of as a test for cancer, this provoked feelings of revulsion and dread (Davison & Clements, 1971).

Charlton (1984) investigated factors which might affect the seeking of prompt treatment for cancer, and found that fear played a role both in delay and in early seeking of treatment. He also found that seeking of treatment is related to knowledge and views of the curability of the disease, and the value of early treatment, the triviality of symptoms - lack of pain etc. associated with ignorance. Embarrassment is also relevant, particularly the association of cancer with sexually transmitted disease.

The assumption is that consumers make decisions on a rational basis. Emphasis has been put on values, attitudes and behaviour belonging to the professional health culture, which believes that the general population shares the same views. Non-participation has a negative correlation with knowledge of cancer, knowledge of health and illness, knowledge of health services, previous health behaviour, attitudes to health professionals, expectations of screening, and practical aspects of the organisation (Kegeles et al, 1965; Sansom et al, 1971; Vuori et al, 1972; MacLean et al, 1984). These factors suggest that non-participators belong to a high risk group.

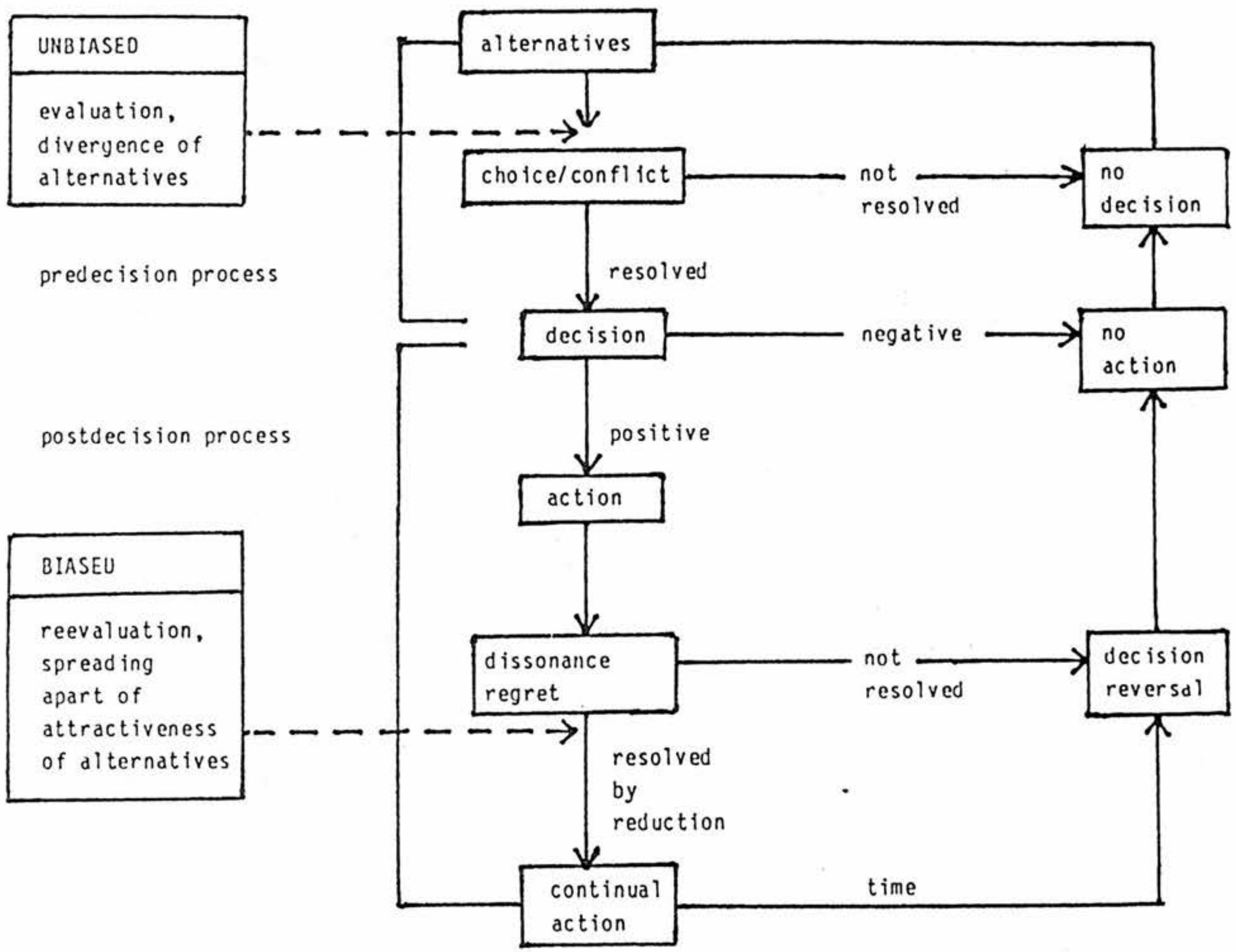
Most studies to which the data relate are old, or relate to screening for other diseases. Those relating to cervical screening have been carried out at a time when screening in this country was only just becoming generally available. It is possible that nowadays, some twenty years later, we have reached a stage where we are left with a hard core of non-participators, probably older women, whose characteristics may not relate closely to those described in Finland, America, Italy and Manchester so long ago, and it is not possible from the literature therefore to know whether unscreened women belong to high risk groups, or how to target them. It is expected that knowledge of cervical cancer screening is widespread, particularly following recent media publicity, and that attitudes to cancer will have changed in a society where disease is discussed much more openly than was the case in the 1960s.

Health Beliefs and Attitudes

An individual's decision whether to undertake a desired health related action will depend on her knowledge,

DIAGRAM I

MODEL OF THE DECISION-MAKING PROCESS



Source: Baric (1969)

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beliefs and attitudes of or about the health state in which she finds herself, and the acceptance of the "at risk" role. The process by which this stage is reached is examined in more detail:-

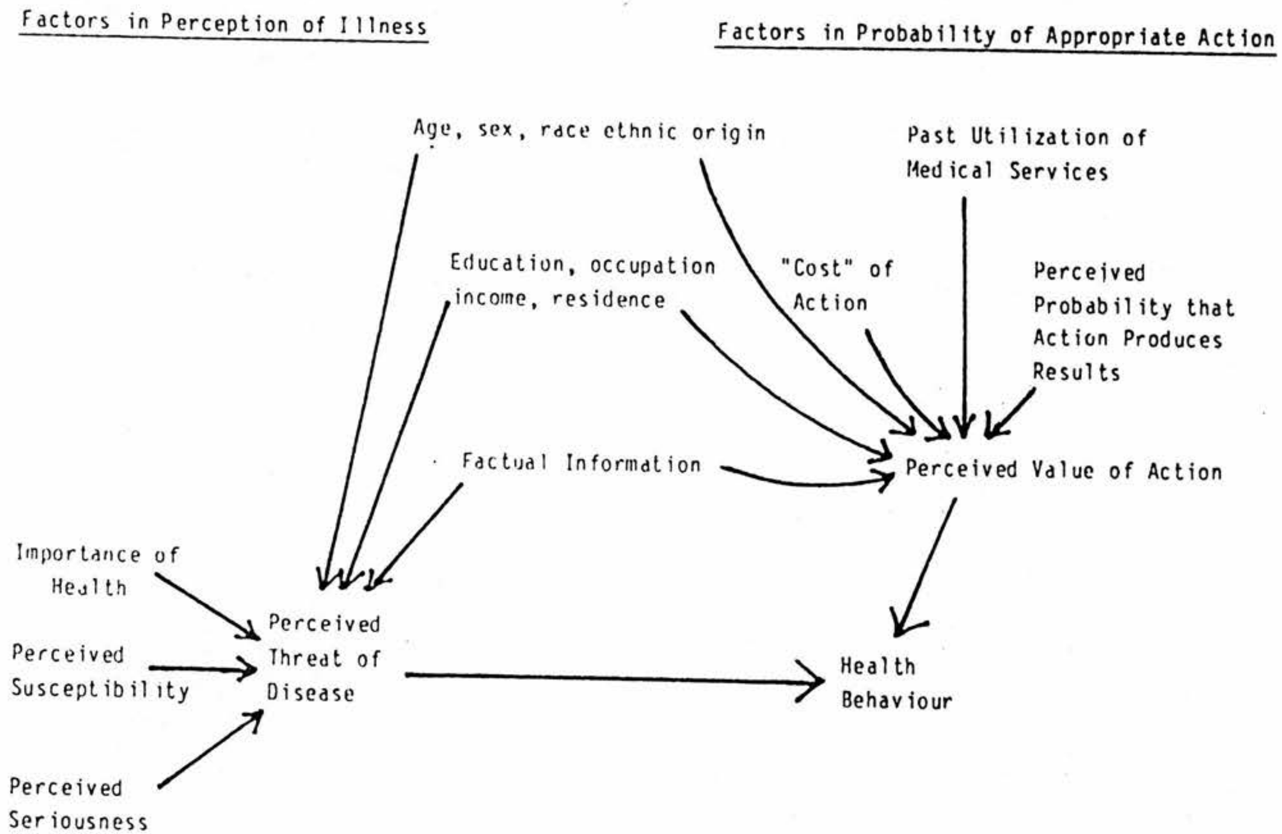
1. The Decision-making Process

This is described in detail by Baric (1969). In deciding to take a desired health related action, the person is faced with several mutually exclusive alternatives giving rise to conflict. To resolve this conflict she will carry out an evaluation of each alternative resulting in collecting additional information and building a divergence between the alternatives. If she does not come to a decision, no action will be taken. If the decision is followed by an action, the person enters a state of cognitive dissonance (Festinger, 1957), i.e. she strives towards consistency of opinions and behaviour - (see Diagram I).

2. Health Beliefs

Hochbaum (1956) investigated factors underlying the decision to obtain a chest x-ray for the detection of tuberculosis, and demonstrated that action is a function of two interacting variables - perceived susceptibilty, which he found had two elements, the belief that the disease was a real possibility and the extent to which it

DIAGRAM II



THE POSTULATED RELATIONSHIP BETWEEN PERCEIVED THREAT OF DISEASE AND HEALTH BEHAVIOUR.

Source: Kasl & Cobb

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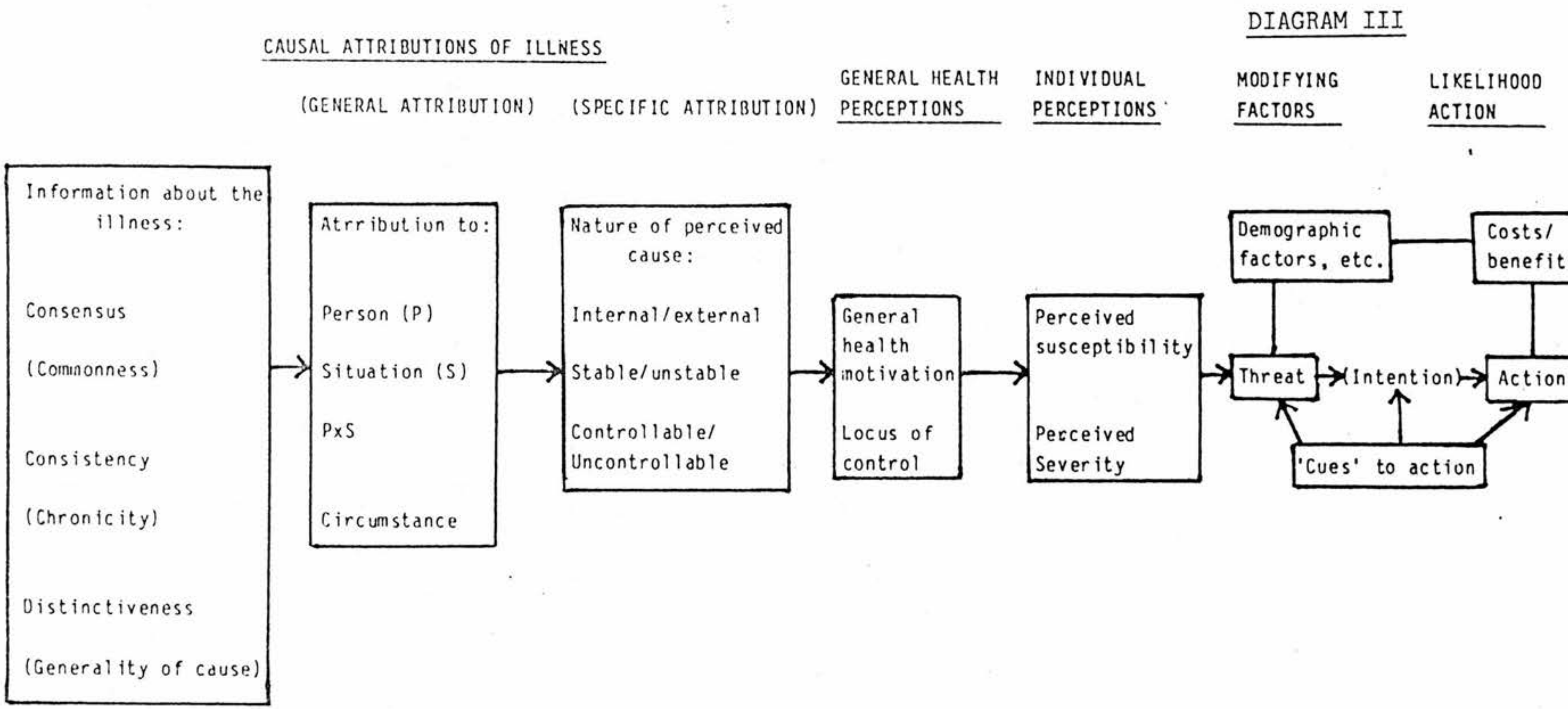
was accepted that one may have the disease in the absence of symptoms, and perceived benefits, the belief that overall benefits would accrue from early detection. Kegeles (1963), studying preventive behaviour in dental care, demonstrated a correlation between frequency of visits and number of beliefs - perceived severity of the condition, benefits of preventive actions and perception of barriers to those actions. His study confirmed the association with perceived susceptibilty, but not with perceived seriousness; perceived benefits were only of importance when combined with susceptibilty. Individuals accepting their susceptibility may be more likely to seek out a professional diagnosis than to use the lay referral system.

In these studies the population in each case was offered the opportunity to take action through directed messages and circumstances which could be interpreted as "cues to action" (Rosenstock, 1974; Zola, 1966). Haefner and Kirsch (1970) found that significantly more people exposed to health education messages attended for health check-ups in the absence of symptoms; they also demonstrated the ability to modify the perceived threat of disease - i.e. perceived susceptibilty to and severity of disease, and the perceived efficacy of professional intervention, leading to predictable changes in health behaviour (Diagram II).

Kegeles (1969) demonstrated that women with relatively high beliefs in their vulnerability to cancer and in the effectiveness of cytology made more visits to cervical cancer screening than their counterparts. Originally the Health Belief Model (Rosenstock, 1974) was a disease avoidance model, but more recently it was recognised that general health motivation is central to health related actions. The Health Belief Model may have greater applicability to middle class groups than to lower status groups, since possession of health beliefs implies an orientation towards the future, deliberate planning and deferment of immediate gratification in the interest of long term goals (Rosenstock, 1974). Also there are different norms and values in different social groups, attributed to health related habits and practices learned during the socialisation process.

King (1982) has attempted to apply Attribution Theory (Kelly, 1967) to health related behaviour, explaining maladaptive response to symptoms and the resulting delay in seeking help, the "actor-observer difference" hypothesis of Jones and Nisbett (1971) to explain divergence in the doctor-patient relationship, and suggesting that particular causal explanations of an illness may be related to certain health beliefs, particularly perceived vulnerability. The concept of "risk" was differentiated into three aspects - probability that an illness may occur according to how common it is



PROPOSED SYNTHESIS OF ATTRIBUTION THEORY AND THE HEALTH BELIEF MODEL: A MODEL TO PREDICT HEALTH BEHAVIOUR.

Source: King (1982)

(consensus), how often it occurred in the past (consistency) and whether it has one or several courses (distinctiveness). King proposed a model combining Attribution Theory and the Health Belief Model to predict health behaviour (Diagram III).

3. Health Status - At Risk Role

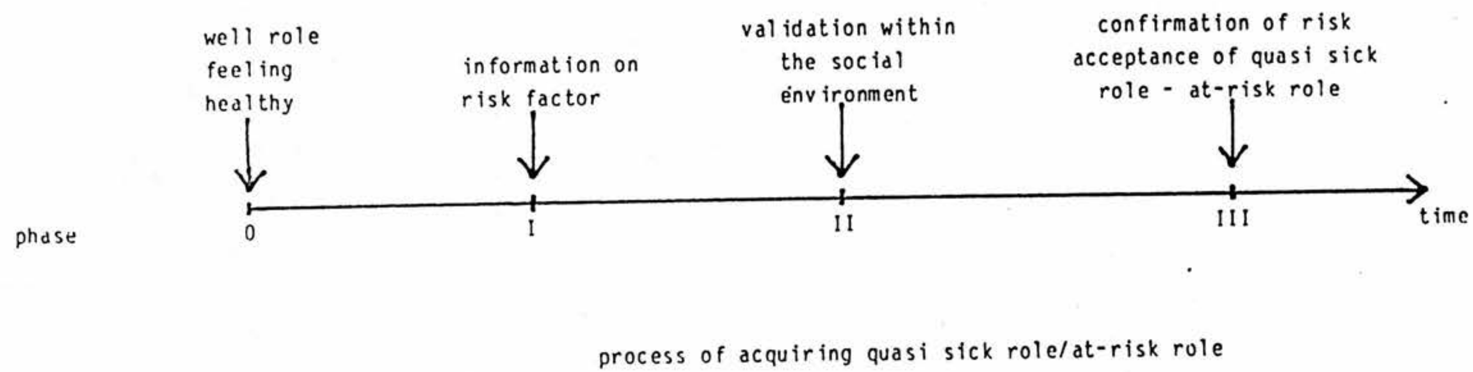
Kasl and Cobb (1966) described the transition from health related behaviour to illness behaviour and the adoption of the sick-role, which consists of a range of dependent behaviour, and neglect of usual duties, and carries with it the obligation to seek competent help. The therapeutic role, in contrast, consists of permissiveness, support, the denial of a reciprocal relationship, and the power to manipulate rewards and sanctions. Baric (1969) proposed an 'at risk' role, which carries with it the necessity to make a decision whether or not to take a preventive action.

Adoption of a role brings expectations and norms of behaviour, and role pressures. The norms must be internalised, and fit into occupational settings and subcultural values. The roles may complement or conflict with other roles; there will be enabling and inhibiting factors such as doctors, nurses, family and employers.

Baric (1974) used an extended model of the sick role to

DIAGRAM IV

PROCESS OF ACQUIRING A QUASI SICK ROLE OR AN AT-RISK ROLE IN A SITUATION OF A PERCEIVED HEALTH THREAT



Source: Baric (1974)

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examine the relationships between the medical profession and healthy individuals within the context of preventive medicine, suggesting that the healthy person at risk will undergo a process similar to that of acquiring a sick role (Diagram IV). The willingness of healthy people to accept the 'at risk' role is limited because this role does not offer any overt rights (gains) but only imposes duties. The 'at risk' role is not institutionalised, and its acquisition depends on the individual - formal recognition is required by the preventive medical profession. There is no time limit for the duration of the 'at risk' role; the person at risk has to undertake obligations now for a possible pay-off some time in the far future. She depends, for reinforcement, on meagre and scattered bits of information about the health threat.

The doctor-patient relationship influences the quantity and quality of information which is communicated between them, and the manner in which it is communicated. This in turn affects retention of facts and advice given, reaction to the information disclosed, and subsequent action (Morgan, 1982). Some patients are not aware that they have had a smear test (Wakefield & Baric, 1965); twenty years ago the medical profession was unwilling to mention "cancer" to the patient (Wakefield & Baric, 1965), and even today there is a tendency to depersonalise and under-inform patients (Lawson, 1980), particularly among hospital doctors (Reynolds, 1978).

These models are used to develop a questionnaire designed to test the attitudes, knowledge and health beliefs of unscreened women (Chapter 5).

CHAPTER 4

REVIEW OF THE LITERATURE

SCREENING FOR CERVICAL CANCER - PRACTICAL ASPECTS

The success of a screening programme depends on the ability of the test to detect any abnormality present. This aspect is not the objective of this thesis, but due to its importance it is discussed in detail in this chapter.

Cervical Cytology

Cervical cancer and pre-malignant disease are both detectable by screening. Detected at an early stage cervical cancer can be cured; pre-malignant disease, untreated, is frequently spontaneously reversible, but there is no test to determine whether a case falls into this category.

In cervical cytology, the cytological smear test, taken from the uterine cervix under direct visualisation, is used as an indicator of the presence of pre-invasive or invasive disease. Sensitivity and specificity have received a great deal of attention. This attention has primarily been addressed to assessment of the false negative rate, i.e. the proportion of those with the disease whose cytological examination is reported as negative. False negative rates are usually under-estimated, as a false negative is only discovered if an abnormal smear or histological examination follows a previously reported negative smear.

For optimal cytological performance several assumptions have to be made (Koss, 1978):-

i) Every precancerous lesion always sheds the characteristic abnormal cells.

ii) The cytological sample is properly taken, fixed and stained.

iii) The sample is competently screened and consistently reported.

1. <u>Determination of the False Negative Rate</u>

The false negative rate can be determined by the following methods:

i) Annual re-screening of the same women in a large survey - patients presenting for re-screening may be a distinct sample within a screened population (Stern, 1959).

ii) Histological examination of hysterectomy specimens from patients who previously had a negative smear (Richart, 1964; Richart & Vaillant, 1965).

iii) Use of diagnostic techniques - colposcopy, biopsy, colpomicroscopy at the time of cytological examinations (Richart & Vaillant, 1965).

iv) Collection of patients with a positive smear or histologically proven neoplasm shortly after a negative smear (Richart, 1964; Richart & Vaillant, 1965).

v) Paired smears (Sedlis et al, 1974).

All these are subject to error, and none provides an accurate overall appraisal. Reported false negative rates vary enormously, from 1.1% (Richart, 1965) calculated on re-screening patients with known neoplasia, to 52% (Sedlis et al, 1974) in a paired screening trial involving 17,000 women.

2. Sampling Error

Inadequate sampling is the most common reason for a false negative result (Melamed, 1981). The quality of the sample depends on the site from which the sample is obtained, and the method of obtaining the sample.

Exfoliation of appropriate material is also important and this factor will be considered first.

a) Failure of Exfoliation

Variability in exfoliation can lead to alternating positive and negative smears. Not uncommonly, in the presence of overt carcinoma, necrotic tissue can prevent exfoliation and a high proportion of smears are unsatisfactory (Husain et al, 1974). Many precancerous and even cancerous lesions may shed only a small number of atypical cells that are not representative of the lesion (Koss, 1978). Failure of exfoliation is more common in post menopausal women.

b) Presence of Endocervical Cells

Absence of endocervical columnar cells indicates failure to sample the endocervical canal. Elias et al (1983) demonstrated an increased relative risk of finding abnormal epithelial cells in women whose smears contained endocervical columnar cells, and recommended a repeat smear should be taken from these women after a short interval, particularly if minor atypia are diagnosed, and this may constitute a warning of a potential false negative.

Poor collection rates for endocervical cells indicate that it is not realistic to call all smears unsatisfactory if endocervical cells are absent, but the screener must be aware of the problems, and evaluate the smear using other criteria (Husain et al, 1974).

c) Sample Quality

i) Obtaining the sample:-

The specimen should be obtained before the cervix is exposed to any other agent. Lubricating jelly and water produce extreme distortion of cellular appearance. Vigorous scraping or gouging may yield tissue fragments that are virtually uninterpretable in the cytology smear (Richart, 1979).

ii) Spreading the sample:-

The desired goal is a monolayer of cells spread uniformly over the entire non-frosted slide surface.

iii) Fixing the sample:-

The smear should be fixed as soon as the specimen is spread. An air dried slide is unsuitable for subtle cytological interpretations (Richart, 1979).

d) Site of Sample

Ayre proposed (1944) that cells and mucus of the external cervical os should be aspirated in addition to the vaginal pool. Wilbanks et al (1968) concluded that the most valuable specimen is that obtained directly from the cervical canal.

Richart and Vaillant (1965) summarised studies comparing false negative rates of endocervical smear, cervical scraping and vaginal pool aspiration, demonstrating false negative rates of 18% or less for endocervical swab and cervical scraping, and from 8 to 69% for vaginal pool aspiration.

Their own study confirmed earlier studies which showed that vaginal pool aspiration carries an unacceptably high false negative rate. External os aspiration and cervical scraping were comparable with each other. They concluded that any physician who has visualised a patient's cervix should perform both an external os aspiration and cervical scraping to provide the highest possible diagnostic yield.

Reagan and Schmidt (1951) and Richart (1979) demonstrated the possibility of detecting a high proportion of endometrial adenocarcinomas by combining endocervical swab and cervical scraping. Aspiration of the vaginal pool carries an increased chance of detecting carcinoma of the endometrium. Aspiration of the endocervical os (Richart, 1979) and endometrium (Koss et al, 1984; Palermo et al, 1985) have recently been advocated as a screening test for endometrial carcinoma. Others (Soule & Dahlin, 1960) have argued that the value of cytology in endometrial carcinoma is primarily confirmatory and should not be relied upon instead of curettage.

e) Adequacy of a Single Specimen

A single smear test is not sufficiently reliable (Husain, 1974). Several authors have argued that false negative rates can be decreased by taking paired smear samples (Sedlis et al, 1974; Beilby et al, 1982). Sedlis demonstrated a marked discrepancy between the first and second slides in individual cases. These differences were in the cellular material obtained rather than in the interpretation; the first scraping may contain a larger number of desquamated cells, the second more cells dislodged from deeper layers. Beilby demonstrated an increased pick-up rate in the second smear, with a false negative rate of 18.5%; 11.1% was attributed to sampling error and 7.4% to screening error.

The Walton Report (Canadian Task Force, 1976) and the British Society for Clinical Cytology (Spriggs & Husain, 1977) recommended that a negative smear at the initial examination should be repeated within one year to reduce false negative rates. The National Institute of Health Consensus Statement (NIH Consensus Statement, 1980) also advised repetition after one year. It is agreed that paired slides as a composite smear on the same glass slide would reduce sampling error and laboratory workload (Beilby et al, 1982).

f) Variation between Types of Spatula

Ayre (1947) devised a spatula for scraping the squamo-columnar junction, which is still widely in use today. Subsequently the Draglin tampon was intensively tested (Bader et al, 1957; Scott et al, 1957) and techniques were developed by which the cervix was swabbed directly with a sponge (Gladstone, 1948).

More recently a method of self-administered irrigation smear (Davis & Kurz, 1962; Davis & Jones, 1966) and cytopipette (Carruthers et al, 1975) were reported. Endocervical sampling has also been carried out using a cotton-tipped applicator stick, but has two disadvantages - the cells may be distorted, and endometrial cells are not detected with the same efficiency (Richart, 1979).

There is concern over whether the Ayre's is the most suitable spatula: in older women the squamo-columnar junction retreats up the cervical canal, causing difficulty in reaching the columnar epithelium. Several trials have been carried out comparing different plastic spatulae with the wooden Ayre's (Bourne & Beilby, 1976; Pistofides et al, 1984; House et al, 1984; Beilby et al, 1982). Older studies tended to compare pick-up rates achieved by one method in one population to those of another method in a different population, without taking into account differing prevalence rates of cervical neoplasia in different economic, social and religious groups (Richart & Vaillant, 1965). Two of the more recent studies (Bourne & Beilby, 1976; Beilby et al, 1982) were better designed and controlled; both demonstrated an improvement over the Ayre's spatula by using the Armovical spatula, but concluded that paired smears significantly increased the incidence of atypical smears.

g) The Timing of Cervical Cytology

It is recommended that a smear is not repeated too soon. If a smear is repeated within 6-12 weeks, in the presence of carcinoma in situ, the repeat is negative in 30-40% of cases (Koss, 1978). The false negative rate here is, of course, subject to all the other factors discussed in this chapter.

3. Problems in Interpretation of Cervical Smears

Richart and Barron (1969) demonstrated the difficulties facing cytologists in interpretation of the changes in a cervical smear:-

i) Invasive carcinoma cannot always be distinguished from carcinoma in situ.

ii) The cells from the most superficial portion of a lesion may be no guide to the epithelial pattern that lies below.

iii) Among invasive cervical cancers, the histological type cannot always be determined from the cytological evidence.

iv) The individual cells of a carcinoma in situ may be so bland in structure that they are not recognised as neoplastic. Co-existence of a dysplastic lesion may cause particular difficulty, especially when the more benign-appearing cells predominate over the carcinoma cells.

v) The epithelial focus which is the source of abnormal cells may fail, from one cause or another, ever to find its way to the cytology slide. Abnormal epithelium of carcinoma in situ and related lesions detaches itself more readily from the mucosal surface than does normal epithelium, and can be lost.

Reagan (1965) points out the importance of the cytological report in conveying the evaluation of cellular evidence to the clinician. The clinician should expect the cytopathologist to indicate the type of lesion anticipated from the cellular findings, and should expect a reasonable degree of accuracy in predicting the diagnosis (Richart, 1979).

a) Inter and Intra-Observer Variation

i) Nomenclature Problems

There is great variation in terms used to describe abnormalities seen (Seybolt & Johnson, 1971). Different classifications used by laboratories can cause confusion to those interpreting results (Koss, 1978). Inadequate international definitions to distinguish dysplasia from carcinoma in situ are blamed for the great individual differences between pathologists in the assessment of epithelial lesions of the cervix (Koss, 1978).

ii) Observer Variation

Close agreement has been obtained between centres in the coding of abnormalities, with good correlation for coding severe dyskaryosis, carcinoma in situ and more severe lesions (Evans et al, 1974). Although the quality of smears has often been criticised, centres do not agree on which smears are unsatisfactory (Evans et al, 1974). Different centres disagree about overall recall times for abnormal smears, the disparity being greatest for inflammation and mild dyskaryosis; this disagreement correlates with availability of facilities. Where resources are hard pressed and normal recall can only be undertaken every 5 years, the number of early recalls tends to be fewer.

iii) Quality Control

Until recently no system of control specimens has existed in cytology as it has in, for example, biochemistry (Melamed, 1981). Laboratories are responsible for monitoring the quality of smears received from different sources, with the aim of ensuring similar results obtained on the same material at different centres (external quality control) or within the same centre (internal quality control). Standards are set by appropriate training. This has been achieved amongst technicians who undergo a well defined course, but not with pathologists whose training may be unstructured and of only 1-3 months duration (Melamed, 1981).

External quality control can be problematic owing to the variation in nomenclature. Internal quality control can be achieved by recycling abnormal smears from the previous day into the current workload, and by rescreening of suspect cases (e.g. those with intermenstrual, post-coital or post-menopausal bleeding) by a more senior person (Hussain, 1974; Melamed, 1981). Randomised recall of 10% of apparently normal smears three months later demonstrated a total error of 1.71/1000 smears screened, but that 1 in 6 positives were not detected (Husain et al, 1974). As an alternative, rescreening of 10% of all normal smears has been advocated (Melamed, 1981).

Accuracy of abnormal smears can be monitored against the histological report, with a review of material where discrepancies occur (Husain et al, 1974), but histology may not be an appropriate reference point, and between centre comparisons have demonstrated there is less agreement between cytology and histology than amongst different cytologists on the cytological report (Lancet, 1984). External performance review of cytology assessment may be carried out by circulating slides around a cluster of 5 or 6 laboratories (Husain et al, 1974; Lancet, 1984(a)).

b) Predictive Value of Cytological Findings

It was noted that cervico-vaginal smears correlated poorly with tissue diagnosis in patients with dysplasia or with in situ or early invasive carcinoma (Villa Santa, 1971) and since then many studies have attempted to correlate cytological and histological findings, and assess the false negative rate of cervical smears.

A wide variation in histological diagnosis for a given cytological diagnosis has been demonstrated (Konikov et al, 1969). Such errors reinforce the necessity for tissue confirmation of cytological diagnosis. Problems arise in relating the histological to cytological material; 'negative' smears are unlikely to have a corresponding histological result available for comparison and a biopsy may be inadequate due to its size, or failure to sample the correct site (Hussain et al, 1984).

CHAPTER 5

METHODS

The Aims and Objectives of the study are set out in Chapter 1, i.e. to compare screening response in two one-year periods, and to determine characteristics of the unscreened population.

In order to meet Objectives 1 and 3 it was necessary to analyse available screening information relating to a defined population in which this information was known to be complete. Derbyshire Family Practitioner Committee (FPC) had received all forms HMR 101/5 returned from the NHS Central Registry in Southport following the demise of the National Recall Scheme in 1981, and from January 1984 had begun to enter screening dates of women screened five years previously in order to generate recall lists, using the Trent software package.

All forms HMR 101/5 dating from January 1982 from Chesterfield Royal Hospital laboratory had been collected together in the Department of Community Medicine at the headquarters of North Derbyshire Health Authority, so that they could be used in providing a comprehensive cervical cytology call and recall sytem on the FPC computer. Current forms were also entered from January 1984. Thus it was known that screening information was complete from 1982 onwards for those women screened at the Chesterfield Royal Hospital, with information from 1979 onwards as available on return from Southport also entered, although subject to the limitations discussed in Chapter 4.

Ascertainment of Study Population

The study population comprised an area surrounding Chesterfield Royal Hospital in which it was known as completely as possible that women who were screened for cervical cancer would have had their smears examined at the Chesterfield Royal Hospital laboratory. Identification of such a population required an examination of the possible service providers, to ascertain which laboratories were examining the smears taken by them. Possible sources of cervical smears were:-

General Practitioners.

Health Authority Clinics.

Hospital Clinics:

- ante natal
- post natal
- gynaecology
- genito-urinary medicine
- other hospital departments

Other - private gynaecological practice.

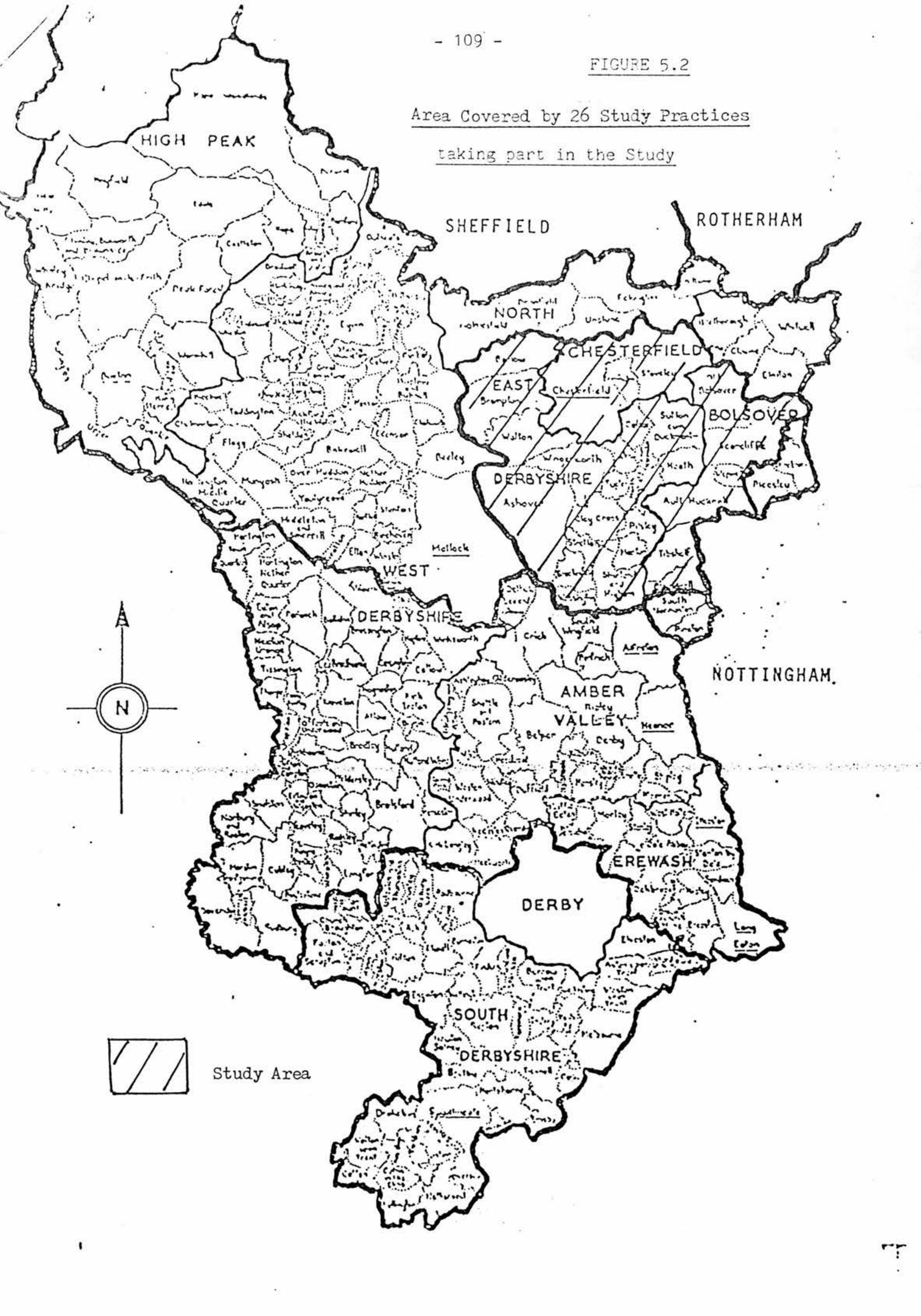
- private cytology clinics.

FIGURE 5.1 Laboratory used by North Derbyshire GPs for Cervical Screening

FIGURE 5.2

Area Covered by 26 Study Practices

taking part in the Study



1. General Practitioners

As part of a study of Family Planning in General Practice in which a structured questionnaire (Appendix A) was sent to all Practices in North Derbyshire, the following question was included:-

"To which laboratory are cervical smears for your practice sent?:

Chesterfield
Sheffield
Mansfield
Worksop
Derby
Christie (Manchester)
Stepping Hill (Stockport)
Other"

Non responders were followed up by a telephone enquiry. The laboratory use of all but four practices was established (Fig. 5.1). One practice did not carry out cytological examinations, referring patients to the local Health Authority clinic. Twenty-six practices (Practices A to Z) in Chesterfield, the southern part of North Derbyshire and the western part of Bolsover were identified as a compact group using the Chesterfield Royal Hospital laboratory, and their practices comprised the study population (Fig. 5.2).

2. Health Authority Clinics

North Derbyshire Health Authority clinics are listed in Appendix B. Except for clinics in Buxton and New Mills these clinics all send their smears to Chesterfield Royal Hospital for screening. It was expected that women registered with the 26 practices identified would be likely to attend clinics within the Health Authority area surrounding Chesterfield, although some to the north might attend Sheffield clinics, and some on the eastern and southern borders might go to Worksop, Mansfield, Nottingham and Derby.

3. Hospital Clinics

The catchment population for Gynaecology for Chesterfield hospitals is 71% of the District population. The flows for this specialty are similar to those described for laboratory usage; if Chesterfield or Bolsover women were being screened at hospital clinics other than those in Chesterfield, it is likely this would have been picked up in the practice survey of incoming smears (see section 'Completeness of Data'). Women screened at Genito-Urinary Medicine clinics are un-named, no information is available to indicate whether women in these 26 practices are screened in these clinics outside of North Derbyshire.

4. Other

Women referred to Chesterfield consultants for private consultation are being screened at Chesterfield Royal Hospital. Marks & Spencer is the only known employer in this area which arranges cervical screening for its employees; the Chesterfield branch employs approximately 185 women, who are screened at a private laboratory on a three-yearly basis. The General Practitioner is informed of the result and in future copies will be sent to the FPC.

Completeness of Data

All laboratories except Nottingham return a copy of form HMR 101/5 to the GP if a woman is screened by a different agency; a survey of a sample of the 26 practices was carried out to test the hypothesis that their patients were likely to have their smears screened in Chesterfield. A sample of seven practices was chosen as representative. This included three practices from a large Health Centre in central Chesterfield, one practice not carrying out screening and two practices from the eastern periphery.

The seven practices were asked to complete a record (Appendix C) entering all incoming smear forms and the laboratory screening them over a one month period. 329 smear results were received by these seven practices during the survey period; 323 (98.2%) of these were screened at

Table 5.1

Laboratories Screening smears in 7 sample Practices. Sept. 1984.

Practice	Laboratory									
	Chesterfield		Mansfield		Derby		Other		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
B	89	100.0	-	-	-	-	-	-	89	100.0
H	72	100.0	-	-	-	-	-	-	72	100.0
L	11	100.0	-	-	-	-	-	-	11	100.0
M	20	95.2	1	4.8	-	-	-	-	21	100.0
S	40	100.0	-	-	-	-	-	-	40	100.0
T	56	100.0	-	-	-	-	-	-	56	100.0
Y	35	87.5	3	7.5	2	5.0	-	-	40	100.0
Total	323	98.2	4	1.2	2	0.6	-	-	329	100.0

Chesterfield Royal Hospital. Only two practices identified smears screened at other laboratories, and these were the two practices on the eastern periphery of the defined area. Practice M had only one smear screened elsewhere, but practice Y had five smears (12.5%) screened elsewhere, and it is possible this figure would be higher if results were forwarded from Nottingham (Table 5.1). Practice Y has been retained in the study population, but this factor will need to be borne in mind when interpreting the results.

Screening Patterns in the Study Population

The source of information for analysis of screening patterns in the study population was the smear form HMR 101/5. The Trent FPC computer programme provided the facility to enter date of smear on an identified patient's record. Patients could be identified by name, date of birth, NHS number, GP and address. A cumulative record of smear dates was generated, with production of a recall date related to the latest screening date.

For the purpose of this study, additional data relating to the periods September 1982 to August 1984 were collected. These included:-

Number of live births.
Source of smear.
Marital status.

Age could be calculated using the date of birth already available on the FPC record.

Analysis of these data required a special programme to be written by Trent Regional Health Authority, and aimed to produce the following information:-

i) Number of women screened from 1.9.82 to 31.8.83, and 1.9.83 to 31.8.84 by age, marital status, number of births, and source of smear, by GP, month, and, for the second 12 month period, whether included on the recall list.

ii) Previous screening history.

iii) Number of women with a record of cervical cytology.

Screening data from the forms HMR 101/5 were entered over a nine month period, with those forms relating to the two twelve-month periods for which extra data were entered being input first. In March 1985 Derbyshire FPC decided to change over from Trent software to a more sophisticated programme written by Exeter Family Practitioner Services (FPS) Computer Unit. This programme is the one to be used eventually by all FPCs in England and Wales. At this stage data for 1.9.82 to 31.8.84 had been entered, but much of the earlier data and subsequent data had still to be entered. The special programme for analysis had to be run before the changeover date, as it was not compatible with the Exeter software, and this unfortunately meant that only information relating to these two twelve-month periods could be obtained. Practice lists for denominator purposes were as at March 1985.

After changeover to Exeter software, the Derbyshire FPC continued to enter all North Derbyshire available information up to March 1985, including forms which had been forwarded from Bassetlaw and Central Nottinghamshire Health Authorities (Worksop and Mansfield Hospitals). The Exeter programme provides the facility to count the number of women in specified five year age groups with no screening date entered, and in August 1985, when inputting was complete, this facility was invoked, providing statistics on the unscreened population by GP and age group, for those aged 15-74.

Practice Policy and Organisation

The objective of this part of the study was to discover what recall and first call systems are run by local GPs, and to examine their relative success. The FPC information on screening patterns related to individual practices, and this could be correlated to particular organisational characteristics of these practices.

List size (women aged 15-74) was obtained as part of the analysis of the FPC data. The Derbyshire FPC list provided christian names of the doctors in the 26 practices, from which the number of female doctors in each practice was calculated.

A questionnaire (Appendix D) was constructed to provide detailed information relating to organisation of recall and call for the practice population. This comprised structured questions aimed to obtain the following information:-

i) Whether there was a formal procedure for organising recall and call of practice patients, who was responsible and how it was done.

ii) What was the practice policy in terms of screening ages and frequency.

iii) What were the follow-up arrangements for non-responders.

iv) What were the follow-up arrangements for women with an abnormality (not reported as part of this thesis).

The questionnaire was sent by post to the senior partner of each practice. Non-responders were followed-up by sending a second questionnaire; those still not returning the form received a telephone reminder and one practice in the 26 study practices was visited. The response from the 26 study practices was 100%.

Information relating specifically to organisation of recall and call was correlated to screening activity within the study practices.

Characteristics of the Unscreened Population

1. Use of Small Area Statistics

Previous studies have indicated that uptake of preventive services is greater in the better educated, higher socio-economic groups; poverty was the most important factor in unscreened women, and non-metropolitan women were less likely to have been screened than metropolitan. In contrast, response to recall was greater amongst the lower social classes, and in housewives rather than working wives. This part of the study aimed to test these hypotheses.

At this time FPC addresses were not all post coded; this would have produced the most specific data to relate to small area statistics derived from census data. As this method of analysis was not available, it was decided to construct statistics relating to the population covered by each of the 26 practices.

Each practice was sent a map of the area divided into Small Areas (Appendix E) on which they were requested to indicate the electoral wards in which the majority of their patients live. They were specifically requested to exclude those areas in which there were only a few patients.

Small Area Statistics were aggregated for each practice, according to the areas indicated. Information relating to the following characteristics was recorded:-

Number of single/widowed/divorced and married women.
Type of housing tenure.
Housing amenities.
Male and female unemployment.
Social class.
Occupational groups.

This information was correlated to screening information obtained from the FPC computer, and to details of practice organisation.

2. Survey of Unscreened Women

Previous work suggests that women in high risk groups are those who do not attend for screening; the average age of death from cervical cancer is 59 (West, 1977), and between 75 and 90% of these women have never been screened (MacGregor and Teper, 1978). There has been some controversy over the previous health of women taking part in screening programmes, but it is agreed that they are less likely to participate in other preventive health measures, and are less likely to know the danger signals of cancer. Previous studies on the characteristics of non-participators in cervical screening programmes are old, and it is possible that, with twenty years of screening experience behind us, reasons for non-participation and the knowledge and attitudes of these women might have changed (Chapter 3).

Analysis of the FPC data confirmed laboratory reports that younger women are the most highly screened; in view of this fact, and that there must be a number of unscreened women in their 40s and 50s with pre-invasive or early invasive disease, it was decided that this survey should be aimed at women aged 45-59. As a result of these theories, the following hypotheses were formulated:-

Unscreened women are:-

1. More likely to be formerly married than presently married, and more likely to be married or formerly married than single.

2. More likely to be in a lower socio-economic group than screened women, and to be married to a non-professional man.

3. Less well educated than screened women, more likely to have left school at 15 or before, and less likely to be employed, or employed in a professional occupation.

4. Less likely to be living in owner occupied accommodation.

5. More likely to have had no, or four or more pregnancies, and to have had the first pregnancy before the age of 20.

6. Less likely to have made use of health care facilities relating to pregnancy or family planning.

7. Less likely to suffer from chronic illness, to have attended the GP during the previous two weeks, or to have been in hospital during the previous twelve months.

8. Less likely to take preventive health action than screened women, and consequently more likely to smoke or to drink alcohol, and less likely to hold positive attitudes regarding health related behaviour.

9. Less likely to know the early warning symptoms of cervical cancer.

10. Less likely to know the advantages of early treatment.

11. Less likely to have read propaganda relating to cervical screening.

12. More likely than screened women to hold prejudicial views about the type of woman likely to develop cervical cancer, and to think that they themselves are unlikely to get it.

13. More likely to give reasons relating to fear and modesty for other women not attending for screening, and that the reasons given are likely to relate to their own reasons for not attending.

Analysis of FPC data showed that women aged 45 and over are the least screened, and therefore the survey population was to be a sample of unscreened women aged 45 to 59, and an equal number of controls. Ideally one would have chosen a random sample of unscreened women from the FPC list, validated the sample against GP records, and then chosen controls from the same practice, or neighbourhood. This would have required the development of a sampling procedure using the FPC register, and the co-operation of all 26 practices. This was likely to be time consuming, difficult, and possibly unproductive, if some practices were unwilling to participate. In view of these problems, four enthusiastic practices with age/sex registers were invited to participate. All women with no screening record in the chosen age group were identified from the age/sex registers, and practice records where appropriate. Controls were chosen as the next screened woman in the same five year age group in the practice age/sex register.

A structured questionnaire (Appendix F) was constructed using open and closed ended questions designed to relate to the hypotheses. Questions relating to occupation, education, housing, and use of health services, and attitudes to smoking and drinking were those used in the General Household Survey. Questions on beliefs about cancer and cancer detection were modifications of those used by Kegeles et al (1965). Further questions relating to pregnancy, use of preventive services, attitudes to healthy eating, and knowledge and attitudes to cervical cancer and screening were devised for this study.

The questionnaire was pilotted in a single-handed practice which was one of the 26 study practices, but not one of the four intended for inclusion in the survey. The questionnaire was sent by post to thirty women taken at random from the practice list, with the same covering letter (Appendix G) from the GP intended for use in the main study. Twenty-six replies (87%) were received; 25 women (96%) thought they had been screened; no attempt had been made in the pilot study to include unscreened or screened women. All but one question had been answered satisfactorily; question 18 was altered subsequently to read "what symptoms/signs would you notice?" as the question "how do you think you would find out about it?" resulted in the answer "by a smear test", and did not therefore test women's knowledge of the early warning symptoms of cervical cancer.

The pilot study enabled construction of coding forms (Appendix H) which were subsequently used to translate the data into coded form for entering on the Trent Regional Health Authority main frame computer. The programme used for analysis was Crosstabs.

The questionnaire was sent to all women identified as being in the study population, accompanied by the explanatory letter (Appendix G) used in the pilot study. The term "Women's Health Survey" was used to describe the study, so that it was not obvious to the women involved that they might have been selected because they had not been screened. Non-responders were sent a reminder letter (Appendix I) three weeks after the initial letter and questionnaire were sent. Information about non-responders relating to social factors and general health was collected from the medical record (Appendix J) in one practice. Time and staff constraints made it impossible to follow-up non-responders individually.

TABLE 6.1

Practice Size 26 Study Practices

No. of Principals	No. of Practices	Average List Size (women aged 10+)	Range of List Size (Women aged 10+)	Average No. of women aged 10+ per Principal
1	9	887	123-1551	887
2	2	1718	1595-1842	859
3	5	3562	2906-4121	1187
4	6	4122	3509-4894	1030
5+	4	5060	3369-6386	964

TABLE 6.2

Comparison of the Study Population with the 1981 Census Population by Age

	POPULATION			
	Study (26 Practices)		Census	
Age Group	No.	%	No.	%
15 - 24	12212	17.6	12748	17.8
25 - 34	11023	15.9	11729	16.4
35 - 44	11189	16.1	10686	14.9
45 - 54	9441	13.4	10336	14.4
55 - 64	10952	15.8	11111	15.5
65 +	14678	21.1	15095	21.1
Not known	17	0.02	0	0.0
Total	65912	99.9	71705	100.1

Null hypothesis - for ages 15 - 64 the two population samples have equal means.

$\bar{x}_1$ = mean age of the study population = 38.8

$\bar{x}_2$ = mean age of the census population = 38.7

$SE(x_1) = 18.2$ $SE(x_2) = 18.2$

$SND = SE(\bar{x}_1 - \bar{x}_2) = 1.4$

$p < 0.05$

CHAPTER 6

RESULTS - SCREENING PATTERNS IN 26 CHESTERFIELD PRACTICES

This chapter examines the screening patterns in the 26 Chesterfield practices included because they cover a compact population, and because they all use one laboratory (Chesterfield Royal Hospital) whose screening data are complete from 1982 onwards. September 1982 to August 1983 (no recall operating) and September 1983 to August 1984 (recall operating) are compared, followed by an analysis of women with no record of screening on the FPC computer at August 1985.

Study Population

Table 6.1 shows a summary of the list sizes of the 26 practices who took part in the study. The smallest practice comprised 123 women aged 10 and over, whilst the largest practice, a partnership of six principals, had 6386 women aged 10 and over on its list. The total number of principals involved in the study was 73.

The study population comprised 69,512 women aged 15 and over. Table 6.2 shows a comparison with data obtained from the census for the area covered by these practices; it is seen that the study population is significantly

TABLE 6.3

Women Aged 15-64 Screened by Year, 26 Chesterfield Practices 1982 - 1983 (No Recall) and 1983 - 1984 (Recall)

Quin-tile	No.of Prac-tices	Popu-lation at Risk	NO RECALL 1982 - 83			RECALL 1983 - 84		
			Screened		Practice Range (%)	Screened		Practice Range (%)
			No.	%		No.	%	
1	5	9319	805	8.6	4.4-9.1	1478	15.9	14.6-18.8
2	6	9510	998	10.5	9.2-11.3	1531	16.1	14.3-20.8
3	5	12360	1515	12.3	11.6-13.0	2260	18.3	14.1-23.7
4	5	11881	1635	13.8	13.2-14.6	2732	23.0	19.3-28.6
5	5	11738	1918	16.3	14.7-17.5	2443	20.8	19.2-28.1
Total	26	54834	6829	12.5	4.4-17.5	10910	19.9	14.1-28.6

under-representative of women aged 25-34 and 45-54, and over-representative of the 35-44 age group. It is possible that differences are accounted for by working women who may be registered with practices outside the area.

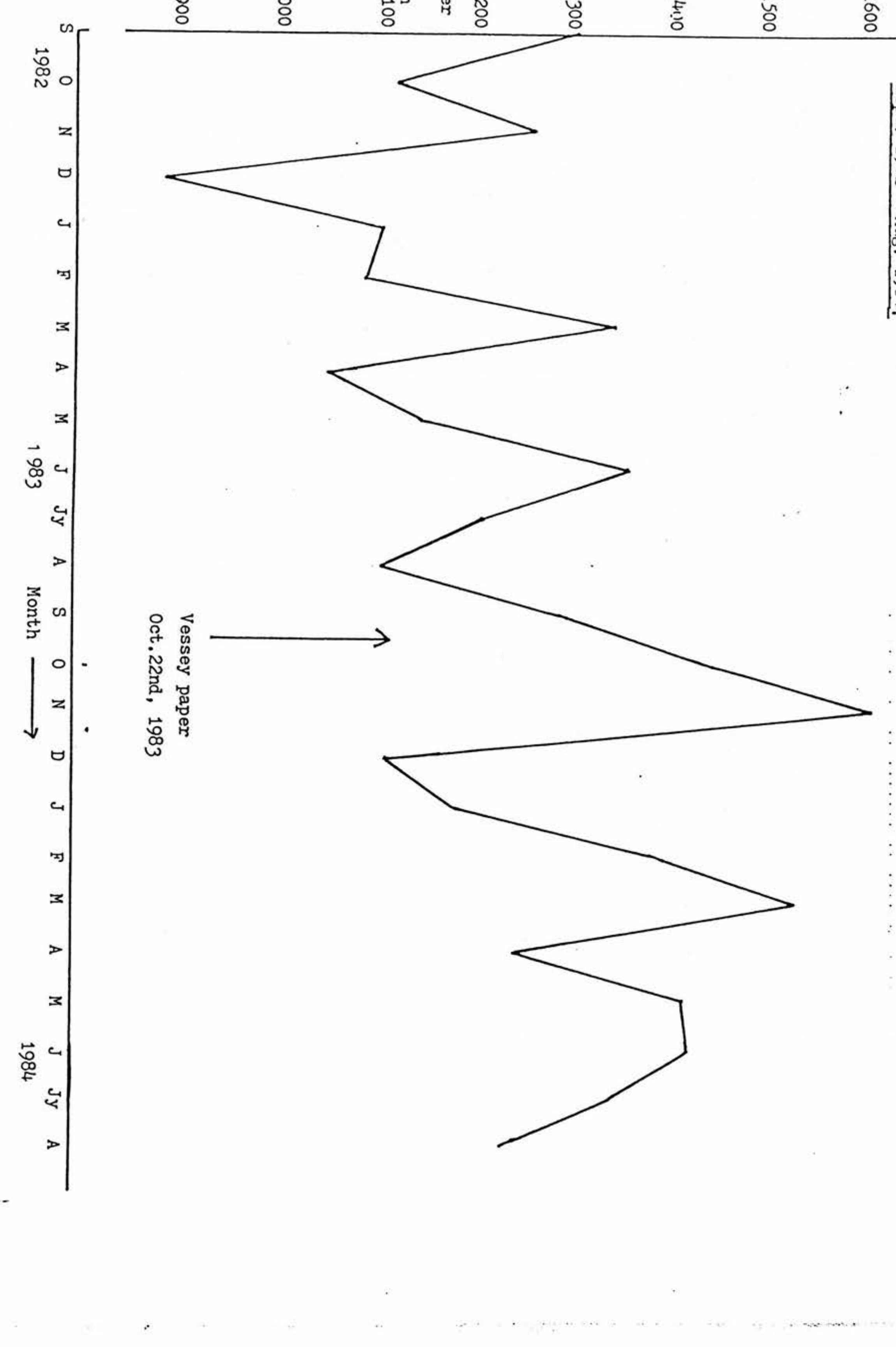
Census data were examined to provide information on the demography of the area under study. This showed that at the time of the census 80% of women aged 25-54 were currently married, falling to 41% over the age of 65. Less than 1 in 20 women under 20 were married. Half the housing in the area was owner occupied and 40% local authority owned. One in 27 families did not have exclusive use of a bath and inside w.c; one in 40 families was overcrowded; 45% of families did not own a car; 1 in 10 men and 1 in 17 women who were economically active were unemployed; 7 out of 10 men, and 3 out of 10 women who were employed were in manual occupations. (See Appendix K for more detailed analysis).

Screening Patterns 1982-3 and 1983-4

Table 6.3 shows the screening pattern of the 26 practices in the 2 years, by quintiles based on the screening pattern in 1982-3. There is a wide range between practices in both years, with a marked increase in the number of women screened in the second year. Practices screened between 4.4% and 17.5% of women on

FIGURE 6.1

Number of Women Screened by Month. North Derbyshire Health Authority. Chesterfield Laboratory. Sept. 1982 - Aug. 1984.



their lists in 1982-3, and 14.1% to 28.6% in 1983-4. The less screened practices in 1982-3 came up to the 1982-3 level of the most screened in the second year.

Altogether 1 out of 8 women was screened in 1982-3 and 1 out of 5 in 1983-4. The latter meets the national targets of screening at 5 yearly intervals. This data does not however tell us who is screened; it is possible the same women are screened repeatedly whilst others remain unscreened. This data relates to women screened, not the total number of smears taken within a practice, and does not identify repeat screening within a year.

The increase in screening over the 2 years occurred in all practices; 5 practices screened more women than the target of 1 in 5 in the second year.

Figure 6.1 shows the number of women screened, by month, by the Chesterfield laboratory during the 24 months period. Until September 1983 screening was steady, with troughs during the Christmas, Easter and Summer holidays. In October 1983 there was a substantial rise, coinciding with publication of the paper (Vessey et al, 1983) relating cervical cancer to the oral contraceptive. From that date onward the level of screening has been higher, with peaks and troughs occurring at the same time of year as before.

TABLE 6.4

Cervical Cytology by Age, Chesterfield 26 Practices.

1982-3 and 1983-4

Age Group	No. in Study Population	No Recall (1982-3)		Recall (1983-4)	
		No. Screened	%	No. Screened	%
15-19	6307	687	10.9	1142	18.1
20-34	16926	2879	17.0	4493	26.5
35-49	15927	2310	14.5	3523	22.1
50-64	15655	953	6.1	1752	11.2
65-74	8339	125	1.5	276	3.3
Total	63173	6954	11.0	11186	17.7

TABLE 6.5

Women Screened for Cervical Disease by Marital Status - All Women - 26 Chesterfield Practices

YEAR	MARITAL STATUS									
	Single		Married		Widowed/ Divorced		Not Known		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
1982-3	1081	15.4	5538	79.1	266	3.8	114	1.6	6999	100.0
1983-4	1959	18.1	8077	74.7	562	5.2	213	2.0	10811	100.0
Total	3040	17.1	13615	76.4	828	4.6	327	1.8	17810	100.0

TABLE 6.6

Women Screened for Cervical Cancer by Number of Births - All Women - 26 Chesterfield Practices

Year	Number of Births													
	0		1		2		3		4+		Not Known		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1982-3	1812	25.9	1276	18.2	1894	27.1	1018	14.5	705	10.1	294	4.2	6999	100.0
1983-4	2741	25.3	1929	17.8	2760	25.5	1570	14.5	1160	10.7	664	6.1	10824	100.0
Total	4553	25.5	3205	18.0	4654	26.1	2588	14.5	1865	10.5	958	5.4	17823	100.0

TABLE 6.7

Source of Smear - 26 Chesterfield Practices, 1982-3 & 1983-4

SOURCE	NO RECALL 1982-3 (%)	RECALL 1983-4 (%)
G.P.	49.0	51.0
Clinic	16.8	15.7
Hospital	14.4	14.4
Not Known	19.7	18.9
Total	100.0	100.0

(Figures do not add up due to rounding)

Table 6.4 shows proportions screened in each age group. The under 35s are the most screened group, with screening falling off rapidly after 40. 50% of smears were from women aged under 35. Screening was higher in the recall period, even older women, and it is possible some of this increase was related to the publicity surrounding the Vessey paper.

In both years approximately three quarters of women screened were married, but an increase occurred in 1983-4 in the proportion of women screened who were either single, widowed or divorced (Table 6.5); this increase is significant but numbers are large. In both years 1 in 4 women screened were nulliparous, but in 1983-4 there was a slight fall in the proportion who had had 1 or 2 pregnancies (Table 6.6). The proportion of single women is higher than the general population and this, together with the high proportion of nulliparous women, probably is accounted for by the large number of smears taken from younger women.

Half the smears in both years were taken in General Practice, and approximately 15% in clinics and 15% in hospital; the source was not given for 1 in 5 smears (Table 6.7). Analysis by practice shows that the proportion of smears taken by General Practitioners ranged from 2% to 74%; clinics from 4% to 52% and hospitals from 4% to 32%. Individual practices were consistent over the 2 years.

Table 6.8

Response by Women Recalled at Monthly Intervals

Over a Three-Month Period

MONTH (1984	1	2	3	4	5	6	TOTAL RESPONDING
January	31	56	22	19	18	9	166
February	40	57	24	15	7	15	161
March	24	106	55	29	30	2	249
Total	95	219	101	63	55	26	659
Cumulative	14%	47%	62%	72%	80%	84%	100%

Table 6. 9

Response to Recall by Marital Status. 26 Chesterfield Practices. 1983 - 1984.

Response to Recall	Marital Status									
	Single		Married		Widowed/Divorced		Not Known		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Responders	10	1.5	600	90.8	40	6.1	11	1.7	661	100.0
Non-Responders	11	1.9	447	78.8	109	19.2	-	-	567	100.0
Total	21	1.7	1047	85.3	149	12.1	11	0.9	1228	100.0

Source: FPC Data

Null hypothesis - there is no difference in marital status between responders and non-responders.

$X^2_{(3)} = 57.5$ $p < 0.001$

The evidence does not support the null hypothesis.

(Appendix L provides a more detailed breakdown of the figures. In some tables the smear totals are different, but due to software changeover at the FPC it was not possible to re-run the programme).

Effectiveness of Recall

Between January and August 1984 only 1164 women in the 26 study practices were recorded as having had a smear 5 years previously. At this time, only 1979 smear data had been entered on the FPC computer and no recent smear records had been entered; thus recall during this period applied to only a small number of women. A proportion of these women may have had an intervening smear; 646 women (55.5%) responded to recall. Table 6.8 shows the response rate by time since invitation. By 6 months 84% of those responding had been screened. The 646 responders accounted for only 6% of all women screened in the year 1983-4.

Analysis by marital status demonstrated a significant difference ($p < 0.001$) between responders and non-responders; more responders than non-responders were married; widowed and divorced women were less likely to respond than married women, whilst very few single women fell into the recall category. 1 in 5 non-responders were widowed or divorced (Table 6.9).

TABLE 6.10

Women With No Record of Screening by Age - 26 Chesterfield Practices. August 1985

Age Group	No. in Population	Women with no Screening Record	
		No.	%
15-19	6309	5131	81.3
20-24	5903	2241	38.0
25-29	5597	1597	28.5
30-34	5426	1436	26.5
35-39	6165	1475	23.9
40-44	5024	1632	32.5
45-49	4738	1856	39.2
50-54	4703	2219	47.2
55-59	5298	2958	55.8
60-64	5654	3809	67.4
65-69	4225	33839	90.9
70-74	4114	3735	90.8
Total aged 15-74.	63173	31928	50.5
Total aged 20-64.	48508	19223	39.6

The Unscreened Population

In August 1985 28,285 women aged 20-64 (60.4%) and 31,245 aged 15-74 (49.5%) had a record of screening on the Derbyshire FPC computerised register. This is likely to be an under estimate of the total women who have at some time been screened, as no information prior to 1979 was entered, and smear data obtained from the NHS Central Registry is thought to have been incomplete (see Chapter 3). Women moving into the district do not usually have previous cytology recorded at the FPC.

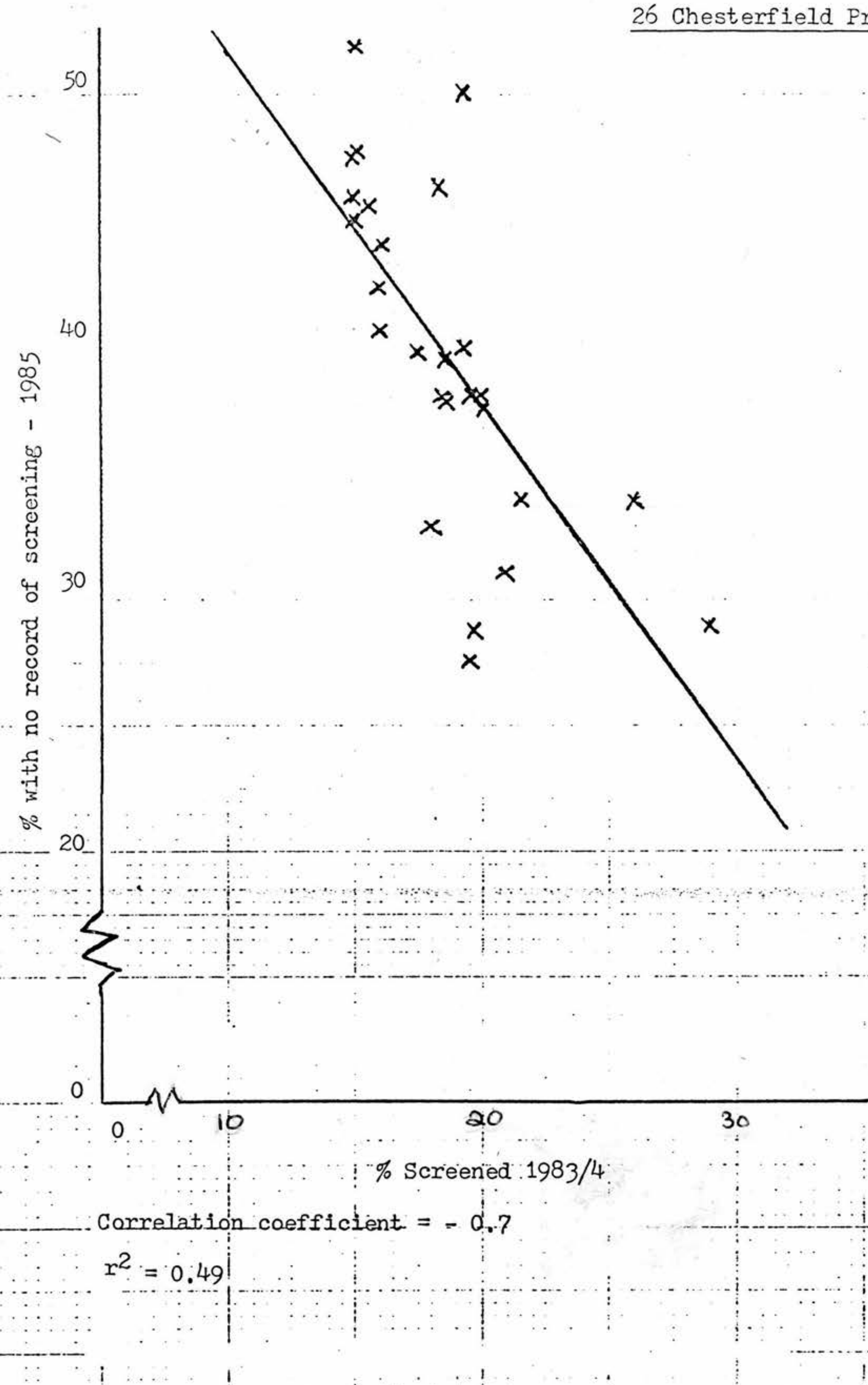
The most screened age group is 35-39, with only 23.9% of women in that age group who had no record of screening. Younger women over the age of 25 had a good population coverage but after the age of 45 the proportion with no record of screening rose rapidly. Two thirds of women aged 60-64 had no record and over 65, 90% had no screening record (Table 6.10).

A detailed analysis by practice is shown in Appendix M. Overall 4 out of 10 women had no record of screening. Practices were inconsistent; some performed well in all age groups, whilst others had screened a high proportion of young women but not the older population. Practices ranged from having screened a quarter to over half of women aged 20-34. In one practice 7 out of 10 women aged 45-64 had no screening record, whilst three

FIGURE 6.2

Population Unscreened 1985 by Population Screened 1983/4

26 Chesterfield Practices



Correlation coefficient = - 0.7

$r^2 = 0.49$

practices had reduced the proportion in this age group with no record to little over one third. Practices where two thirds of older women had no screening record also had over one third of young women unscreened.
There was a strong negative correlation between proportion screened by practice in 1983/4 and proportion unscreened ($r2=0.49$) (Figure 6.2). Practices near the median were more closely related whilst there was a greater divergence amongst those practices both with a high proportion unscreened (which tended to have done better in 1983/4) and those with fewer unscreened (2 of whom had a high rate of screening in 1983/4 and several of whom tended towards the mean for 1983/4). Even so, the 4 practices which screened greater than 20% in 1983/4 all had overall screened a high proportion of their female population.

Considering the highest incidence of cervical cancer is in older women, and the DHSS recommendations are for older women to be given priority, it appears that many practices still have a large percentage of older women who still require to be called for screening.

Summary

1. Total screening increased from 1 in 8 women in 1982-3 to 1 in 5 in 1983-4. This increase may be linked to the publicity surrounding the Vessey report which suggests a relationship between cervical cancer and the oral contraceptive.

2. Sufficient smears are being taken to screen all women aged 20-64 five-yearly, but at present 50% of smears are taken from women aged under 35. Older women are the least screened.

3. 25% of women screened are single, and 25% nulliparous. This probably reflects the high proportion of smears taken from younger women.

4. There are large differences between practices, both in the proportion of women screened and by whom smears are taken. Overall 4 out of 10 women aged 20-64 had no record of screening between 1979 and 1985.

5. The analysis took place too early in the programme of FPC based recall and call for any conclusion to be drawn about its effectiveness; 1 in 5 non-responders were widowed or divorced.

CHAPTER 7

RESULTS - PRACTICE ORGANISATION AND SCREENING

This chapter reports on the organisation of practices, as ascertained by the postal questionnaire to senior partners; results are related to the proportion of women with no record of screening on the FPC register (see Chapter 6).

The results of the questionnaire to the senior partner of each of the 26 practices defined as being within the catchment population of Chesterfield Royal Hospital are summarised in Appendix N.

Responses to questions on the postal questionnaire to General Practices have been analysed to investigate any relationships between practice policy and characteristics, and the proportion of women with no screening history.

The survey data yielded 12 factors which related to the following characteristics of the practices and its screening policy; the responses constituting these factors are indicated on the questionnaire.
(see Appendix D).

A. Frequency of recall.

B. Call system.

C. Use of age-sex register in initiating calls.

D. Method of invitation for screening.

E. Record of recalls.

F. Number of principals.

G. Number of trainees.

H. Size of practice.

I. Use of FPC register for initiating recalls.

J. Age groups screened.

K. Policy towards non-attenders.

L. Number of female doctors.

The factors were fitted individually by the computer programme GLIM, using size of the practice female population (10+) as weights. Six factors were found to contribute significant effects; these are summarised below:-

A -	Frequency of recall	- $p < 0.05$
B -	Call system	- $p < 0.05$
C -	Age-sex register	- $p < 0.001$
I -	FPC register to initiate recalls	- $p < 0.05$
J -	Age groups screened	- $p < 0.01$
K -	Policy for non-attenders	- $p < 0.05$

FIGURE 7.1

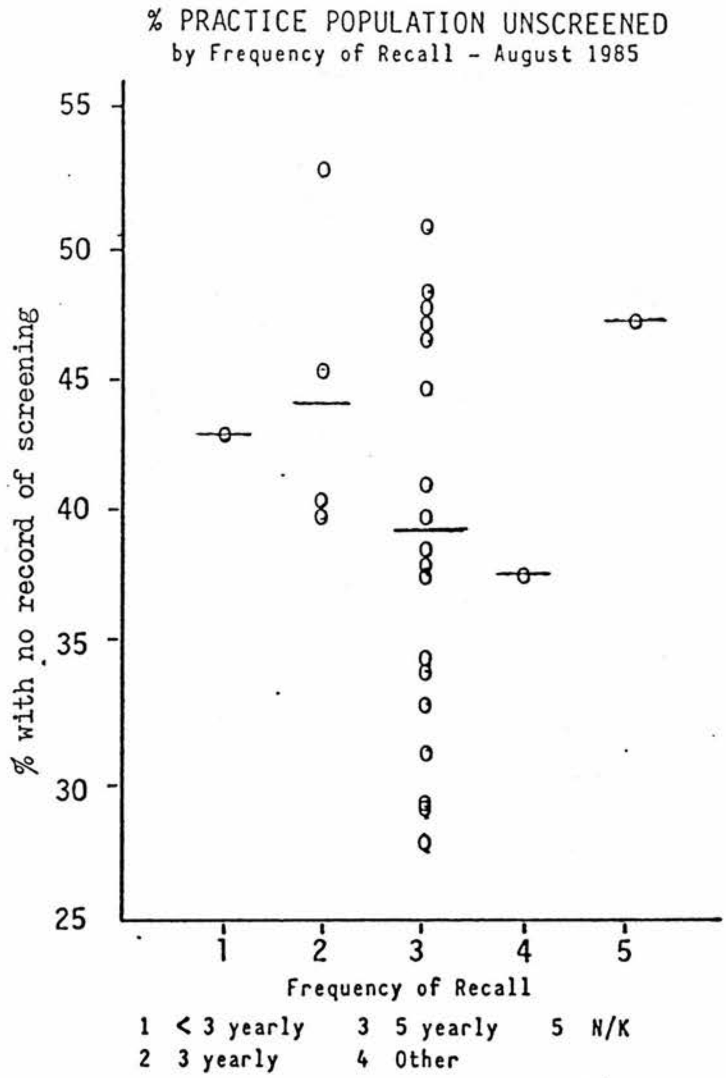
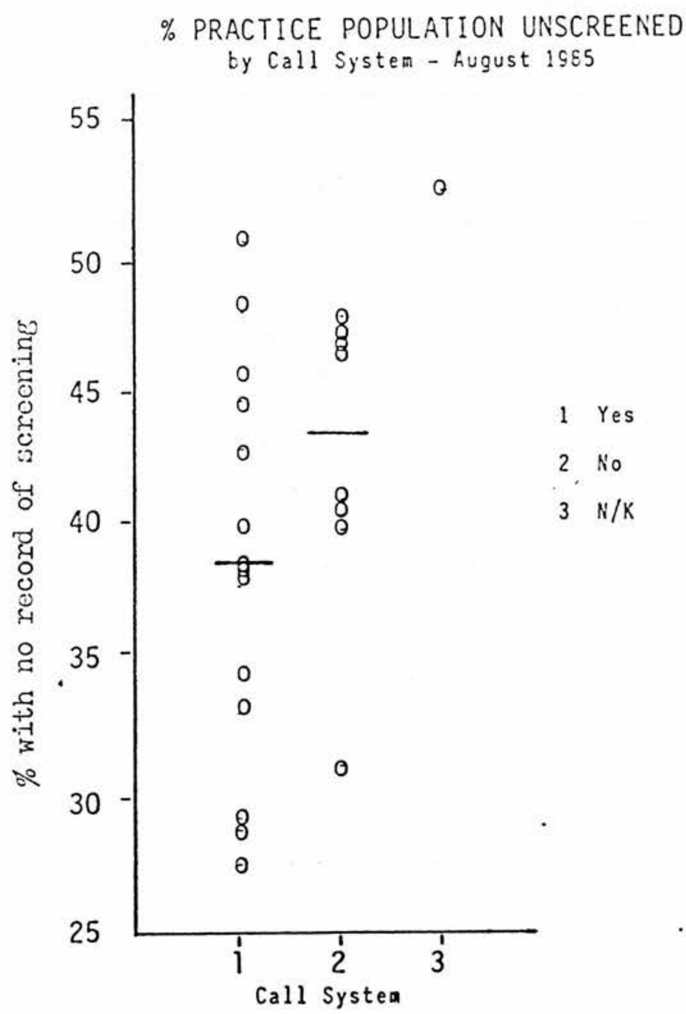

% PRACTICE POPULATION UNSCREENED
by Frequency of Recall - August 1985
% with no record of screening
55
50
45
40
35
30
25
1
2
3
4
5
Frequency of Recall
1 < 3 yearly
2 3 yearly
3 5 yearly
4 Other
5 N/K

FIGURE 7.2


% PRACTICE POPULATION UNSCREENED
by Call System - August 1985
% with no record of screening
55
50
45
40
35
30
25
1
2
3
Call System
1 Yes
2 No
3 N/K

Frequency of Recall

This factor was split for analysis at two levels:

1. Recall 3 yearly or less.
2. Recall 5 yearly.

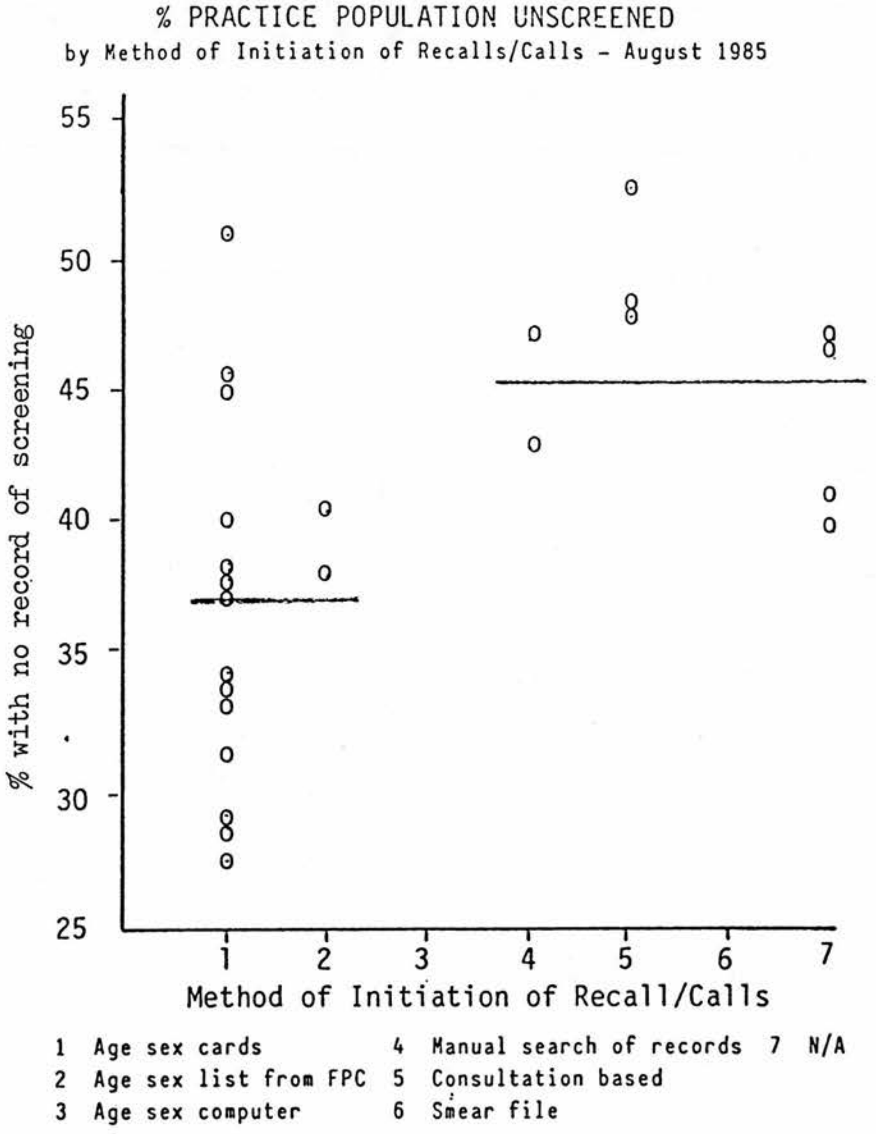
The mean proportion of women unscreened is higher for practices which recall 3 yearly or less (43.8%) than for practices which recall 5 yearly (38.8%) (Figure 7.1).

It is possible that practices screening 3 yearly or less screen the same women repeatedly, without approaching the concept of screening in a systematic manner, and without attempting to identify women who have not been screened. Alternatively these may be very enthusiastic practices who have only recently implemented their screening programme and consequently have not yet screened a high proportion of their practice population.

Call System

The findings confirm what one would expect, that practices running their own call system have screened more women (a mean of 38% with no screening record on the FPC computer) than practices that do not have a call system (43%) (Figure 7.2). It is the objective of such a system to increase the number of women screened, and

FIGURE 7.3


% PRACTICE POPULATION UNSCREENED
by Method of Initiation of Recalls/Calls - August 1985
% with no record of screening
55
50
45
40
35
30
25
1
2
3
4
5
6
7
Method of Initiation of Recall/Calls
1 Age sex cards
2 Age sex list from FPC
3 Age sex computer
4 Manual search of records
5 Consultation based
6 Smear file
7 N/A

these practices have achieved an increased coverage of their population, and it is surprising and disappointing that practices with a call system have not achieved a higher population coverage. The questionnaire did not ask how long the call system had been running.

Age-Sex Register

The practices were split into 2 groups for this analysis:

1. Age-sex register in use for initiating recalls/calls.

2. Recalls/calls initiated using manual search of records, opportunistic screening at consultations, consultations, or no call/recall system.

This analysis produced the widest variance between the two groups; practices using an age-sex register had a mean of 37% of their women unscreened, compared with practices with no such methodical manner for ascertaining those due for screening who had 45% still unscreened (Figure 7.3). These results are encouraging and confirm the benefit of running an age-sex register. The questionnaire did not ask which age groups had so far been targetted, and the analysis of screening by practice (Chapter 6) revealed a wide variation by practice in the proportions screened at different ages, although practices had consistently screened more younger women.

FPC Register

The Derbyshire FPC produce a monthly list of women due for 5 yearly recall, which is then sent to the GPs responsible to enable them to check whether it is appropriate to recall the women whose names appear on the list. Certain practices have opted out of this system, either to run their own recall, or to use the list to generate their own letter.

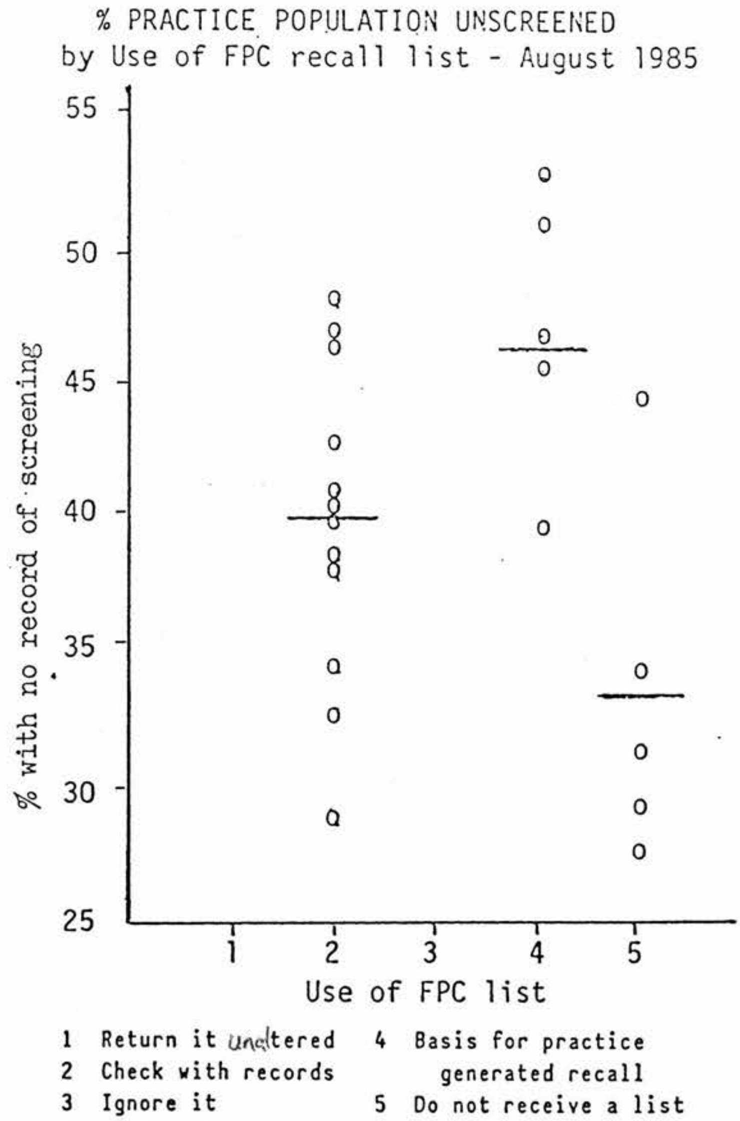
For analysis the replies were divided as follows:

1. Practices which check the FPC list with their records/practices which do not receive a list.

2. Practices which use the FPC list as a basis for a practice generated recall.

Those practices checking the list against records and then returning to the FPC, or those electing not to receive a list, were found to have screened a greater proportion of the women on their lists; in these practices a mean of 38% of women had no record of

FIGURE 7.4


% PRACTICE POPULATION UNSCREENED
by Use of FPC recall list - August 1985
% with no record of screening
55
50
45
40
35
30
25
1
2
3
4
5
Use of FPC list
1 Return it unaltered
2 Check with records
3 Ignore it
4 Basis for practice generated recall
5 Do not receive a list

screening compared to 46% in those practices relying on the list for practice generated recall (Figure 7.4). At the stage this study was conducted there were still deficiencies in the list produced by the FPC (as discussed earlier), this is reflected in the records of the practices who unfortunately have relied on the list. In addition the list was only useful for recall, and did not at that stage identify unscreened women for call. (Such a system has since been instigated).

Figure 7.4 demonstrates that practices who elected not to receive the FPC list, i.e. those running their own recall/call systems, have screened more women than the two other groups, with only 1 in 3 women with no screening record.

Age Groups Screened

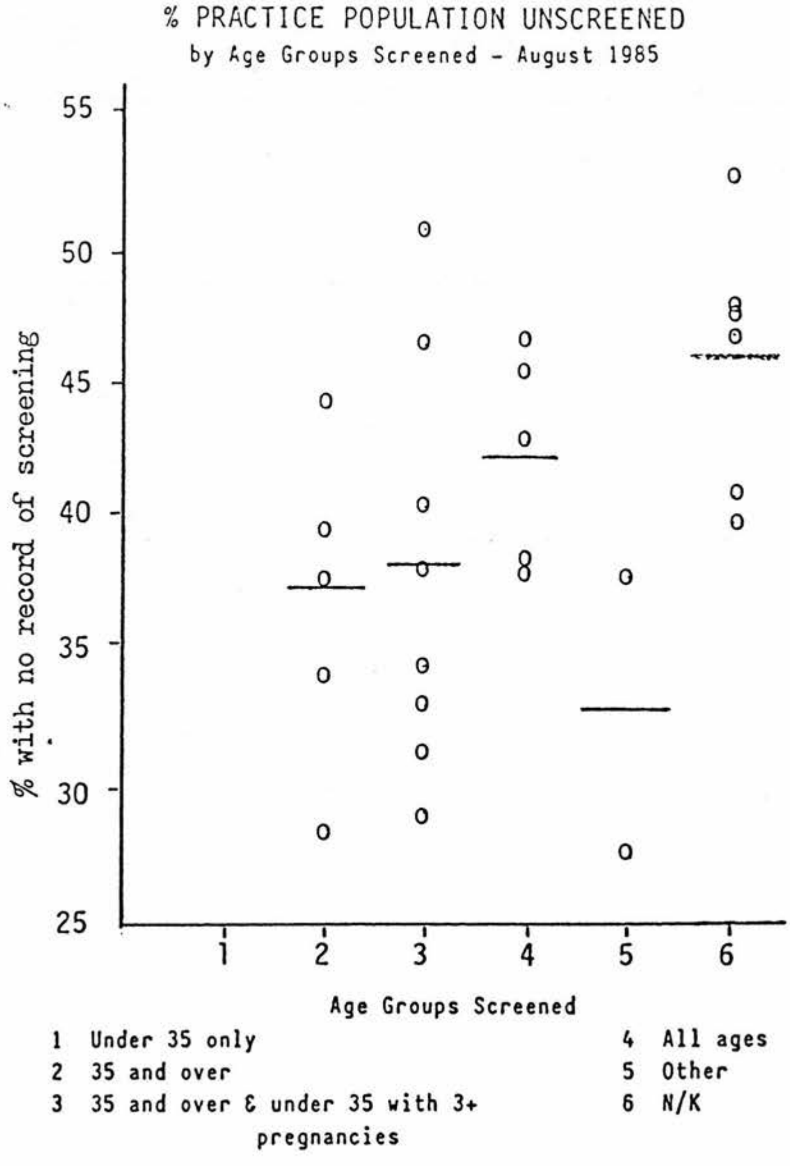
Practices were divided into 2 groups:

1. Practices screening women aged 35 and over, and 35 and under with 3 or more pregnancies. (DHSS policy at the time).

2. Practices screening all ages, or with no policy.

Practices screening older women specifically, and younger multiparous women, had an average of 37% of

FIGURE 7.5


% PRACTICE POPULATION UNSCREENED
by Age Groups Screened - August 1985
% with no record of screening
55
50
45
40
35
30
25
1
2
3
4
5
6
Age Groups Screened
1 Under 35 only
2 35 and over
3 35 and over & under 35 with 3+ pregnancies
4 All ages
5 Other
6 N/K

women with no screening record, compared with practices screening all ages or with no specific policy which had an average of 43% unscreened (Figure 7.5). Practices with no policy did worst with 45% unscreened.

Until recently it has been acceptable to concentrate on older women, indeed the DHSS stress that older unscreened women should be given priority. Practices with a policy to screen older women are doing better, but it is important to ensure that sexually active young women are included in the screening system. Further analysis of the data using age groups screened would enable exploration of correlations between policy and actual screening coverage, but begs the question of whether 26 practices constitute too small a sample or whether individual GPs should have been questioned.

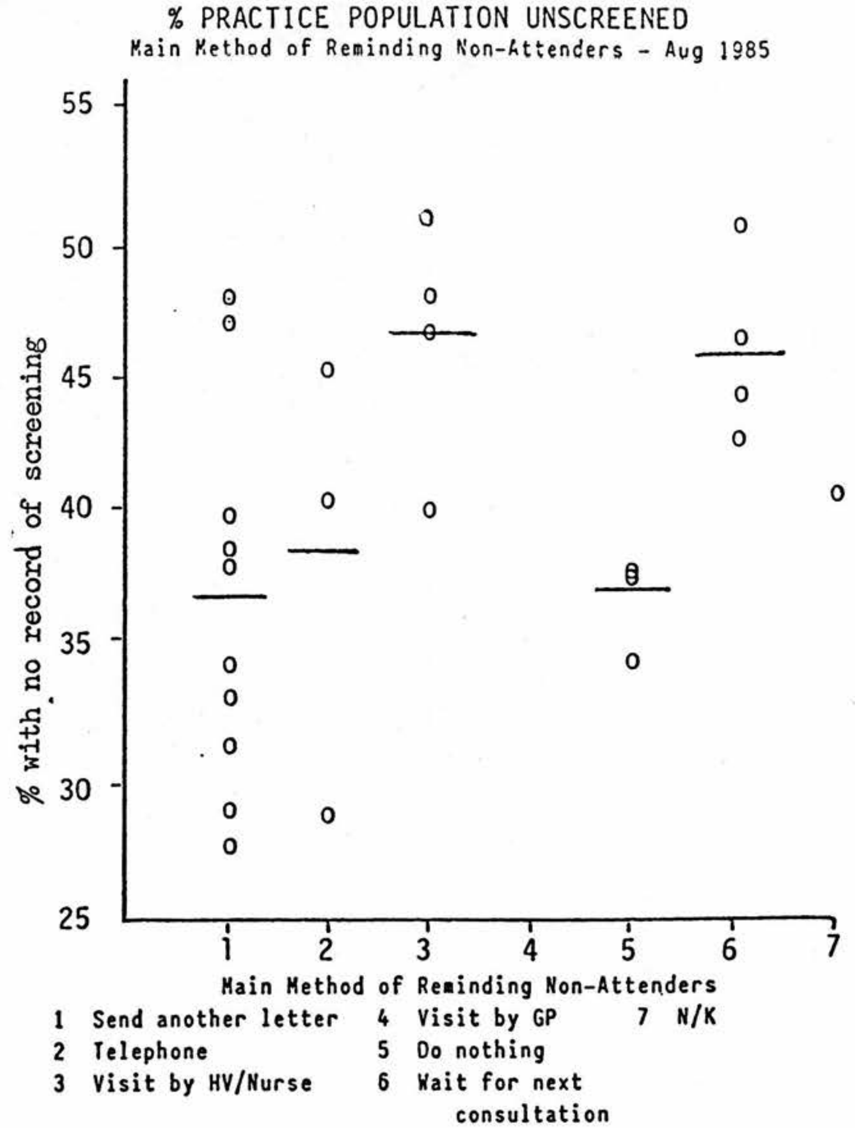
Non-Attenders

Two levels of policy were analysed:

1. Practices which send another letter or telephone a women if she does not attend for screening.

2. Practices which send the health visitor or nurse to visit, or do nothing, or wait for the next consultation if a woman does not attend for screening.

FIGURE 7.6


% PRACTICE POPULATION UNSCREENED
Main Method of Reminding Non-Attenders - Aug 1985
% with no record of screening
55
50
45
40
35
30
25
1
2
3
4
5
6
7
Main Method of Reminding Non-Attenders
1 Send another letter
2 Telephone
3 Visit by HV/Nurse
4 Visit by GP
5 Do nothing
6 Wait for next consultation
7 N/K

In the former group the mean unscreened population is 37% whilst for the latter this figure is 43% (Figure 7.6). Only 3 practices visit non-attenders, and these may be concentrating on recalls rather than calling unscreened women. Those who wait for the next consultation are amongst the lowest screened practices; it is likely that screening is forgotten by the time the woman next attends, and that practitioners do not routinely check the records at a consultation. The most popular method of following up non-responders is by letter; 4 practices use the telephone as well as writing to patients, but only one of these practices has a good screening record.

Conclusion

The questionnaire has been valuable in teasing out some of the factors which influence a Practice's ability to achieve the highest coverage of the population it serves. However, the fundamental assumption that all partners work to the same policy has been made, and it is probable that in some practices this is not so. Retrospectively it would have been more valuable to have carried out the survey and analysis on an individual practitioner basis, particularly as the screening data was available in this form.

Summary

The main features of practice organisation and policy which contribute to increased population coverage in cervical screening are:

1. A systematic approach to recall involving a set interval for screening, and practices choosing 5 years are doing best. If the FPC list is used it needs to be checked against practice records, and supplemented by local information obtained from the age-sex register.

2. A call system is necessary to identify women not already screened and therefore not included in the recall system; the practice age-sex register should be used as a basis for identifying women not yet in the system.

3. Practices require a policy in terms of which age groups should be included in their recall and call system. Those who state the age groups screened are probably more organised and are achieving better population coverage.

4. Non-attenders require to be followed up; this is best done by letter or telephone.

CHAPTER 8

RESULTS - SOCIO-ECONOMIC FACTORS AND SCREENING

In this chapter the relationship between socio-economic data obtained from each practice from aggregation of the 1981 census data, and the proportion of women with no record of screening on the FPC computer is examined. Census data by practice is shown in detail in Appendix O. Appendix K sets out the aggregated demographic and socio-economic data for the area covered by the 26 study practices. The data were analysed by both Univariate and Multivariate techniques.

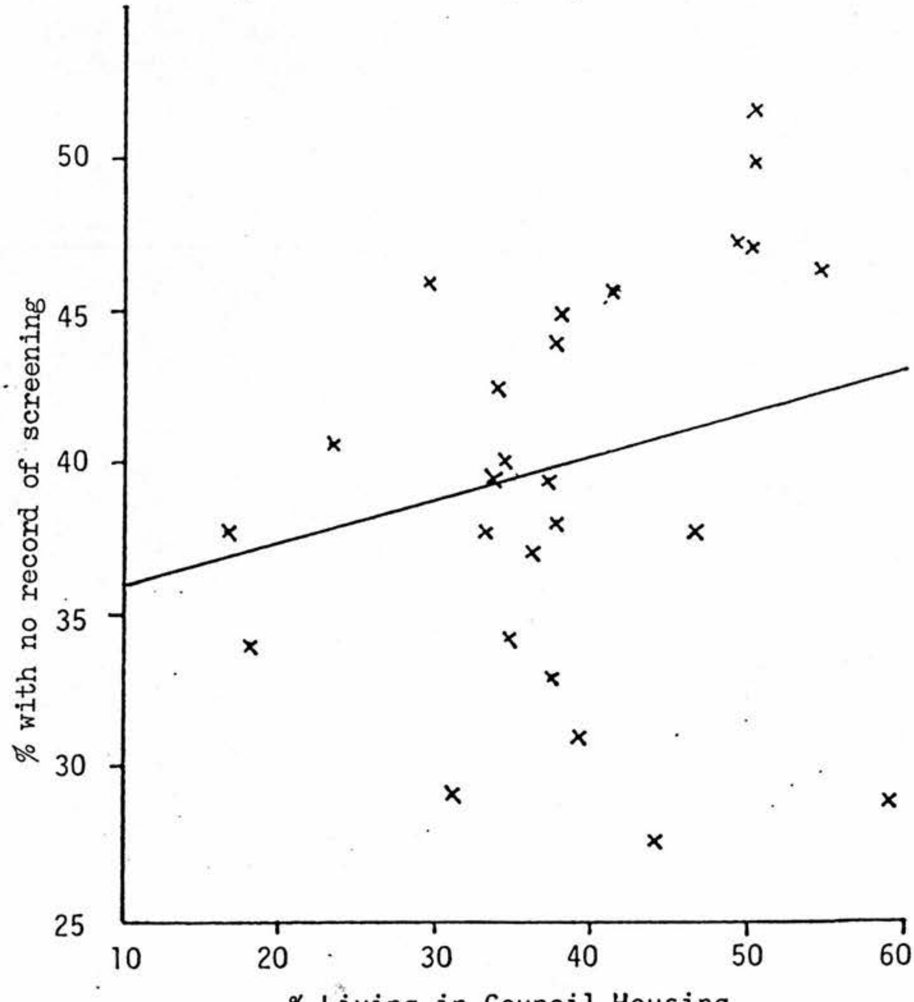
Univariate Analysis

Housing

Practices varied considerably in the social conditions of the population they covered. Practice F covered an area where only 16.6% of the households were in Council housing, but 4.2% did not have exclusive use of a bath or inside WC; Practice E had 18.0% in Council housing, and Practice W 23.2%. At the other extreme Practice L covered an area where 59.2% of households were in Council housing and 3.5% did not have exclusive use of a bath or inside WC. Practice I had the largest proportion of households without bath or WC, 4.9%, and 41.3% of the households were

FIGURE 8.1

Practice Population Unscreened by % Living in Council Housing - Chesterfield, August 1985



Correlation coefficient = 0.255

in Council housing. Over the 26 practices there was a positive correlation between proportion in Council housing and proportion with no inside bath or WC (correlation coefficient r=0.34).

In the 26 study practices there was a positive correlation between proportion of households living in Council housing, and proportion of women aged between 20 and 64 with no record of screening on the FPC computer (correlation coefficient r = 0.255) (Figure 8.1). Two practices stand out as not conforming to this pattern; these are Practices C and L, the 2 Practices with the highest proportion screened; practice C has 43.9% in Council housing, and Practice L the highest proportion 59.2%. Both Practice C and Practice L run their own call system and use an age-sex register.

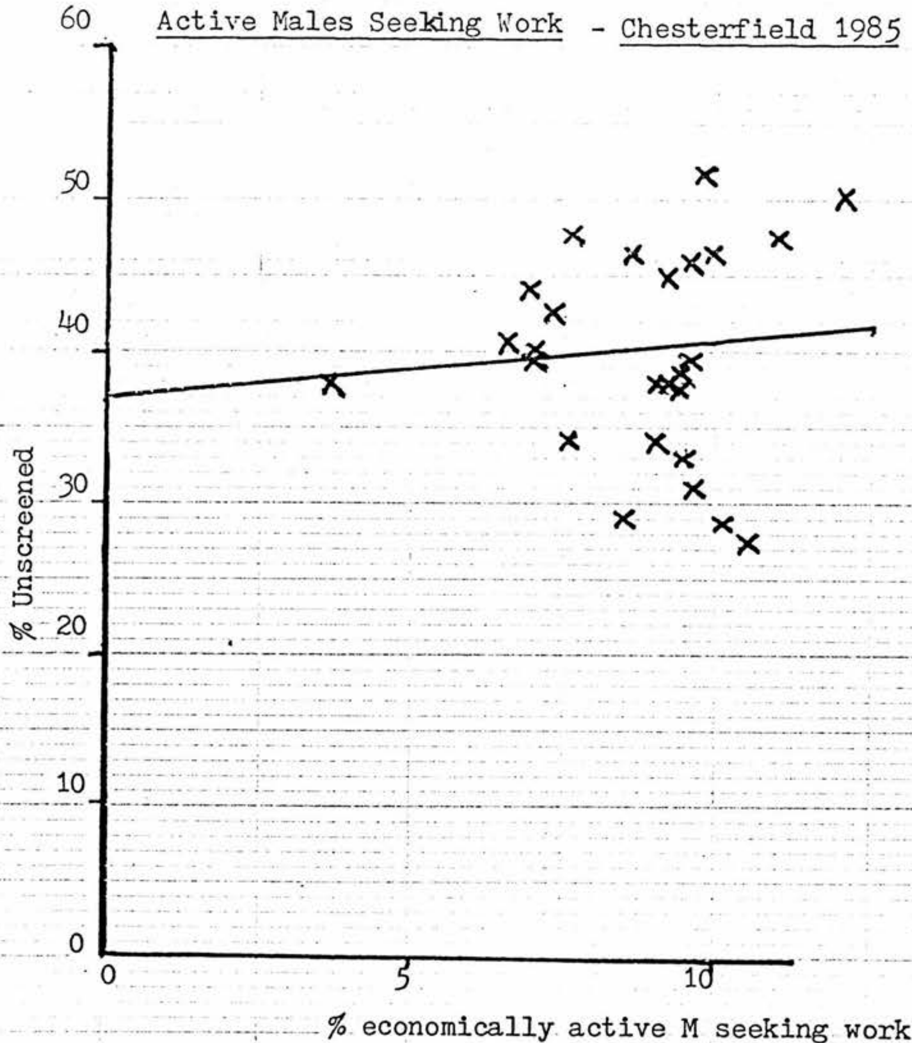
The relationship found between Council Housing and Screening is not seen with households with no inside bath or WC; there is no correlation between proportion with no inside bath or WC and proportion with no screening record (r = -0.015).

Male Employment

The proportion of men in the area covered by the practices who were economically active at the time of the 1981 census varied little between practices, from 74.1% to

FIGURE 8.2

Practice Population Unscreened by Proportion of Economically Active Males Seeking Work - Chesterfield 1985



Correlation coefficient = 0.084

79.9%; there was a small correlation with proportion of women with no screening record (r=0.154). This relationship is the reverse of the expected, since a higher proportion of men economically active suggests a young population.

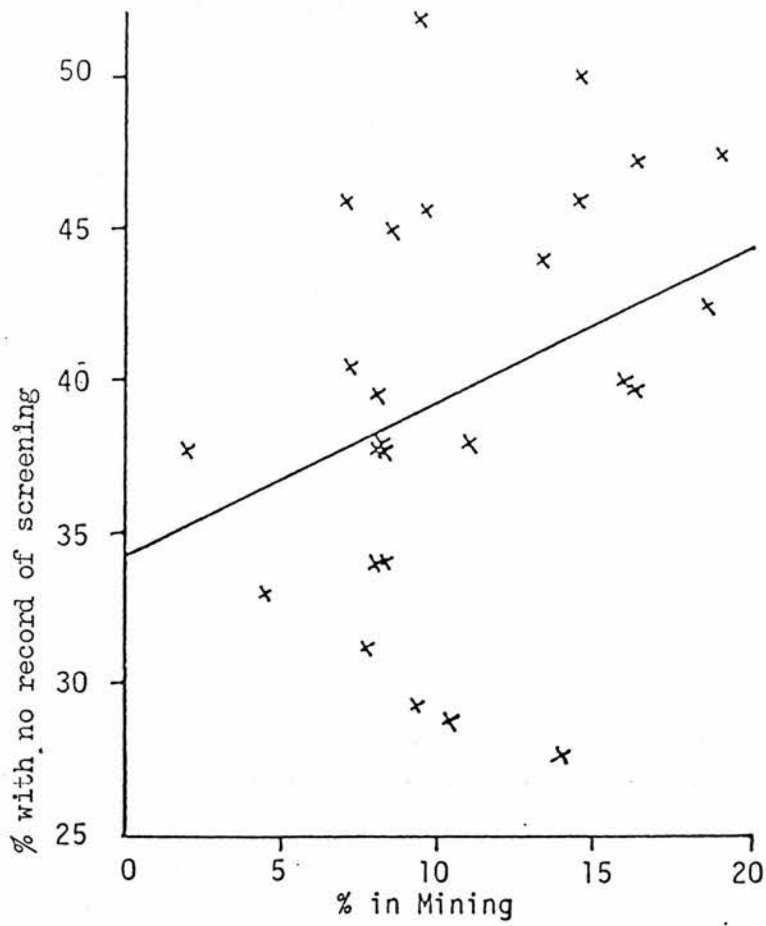
The social class of employed men varied between 20.0% in Social Class IV and V (Practice W) and 34.7% (Practice O), apart from Practice F, an outlier at 9.3%. Practice F is a single handed rural practice and many characteristics differ from the other practices. Very little correlation was found between proportion of men in Social Class IV and V and proportion with no screening record (r=0.12).

The proportion of all men who were seeking work varied from 5.0% in Practice V and 5.2% in Practices W and Z, to 9.3% in Practice P; proportion of economically active men seeking work was lowest in Practice F at 3.6%, and 6.6% in Practice W, rising to 10.5% in Practice C, 11.0% in Practice X and 12.1% in Practice P. There was very little correlation betwen these variables and proportion with no screening history (r=0.1 for proportion seeking work, 0.084 for proportion of economically active men seeking work) (Figure 8.2).

These findings of little correlation between male economic activity and screening are surprising; evidence from previous studies (see Chapter 3) suggests that women from

FIGURE 8.3.

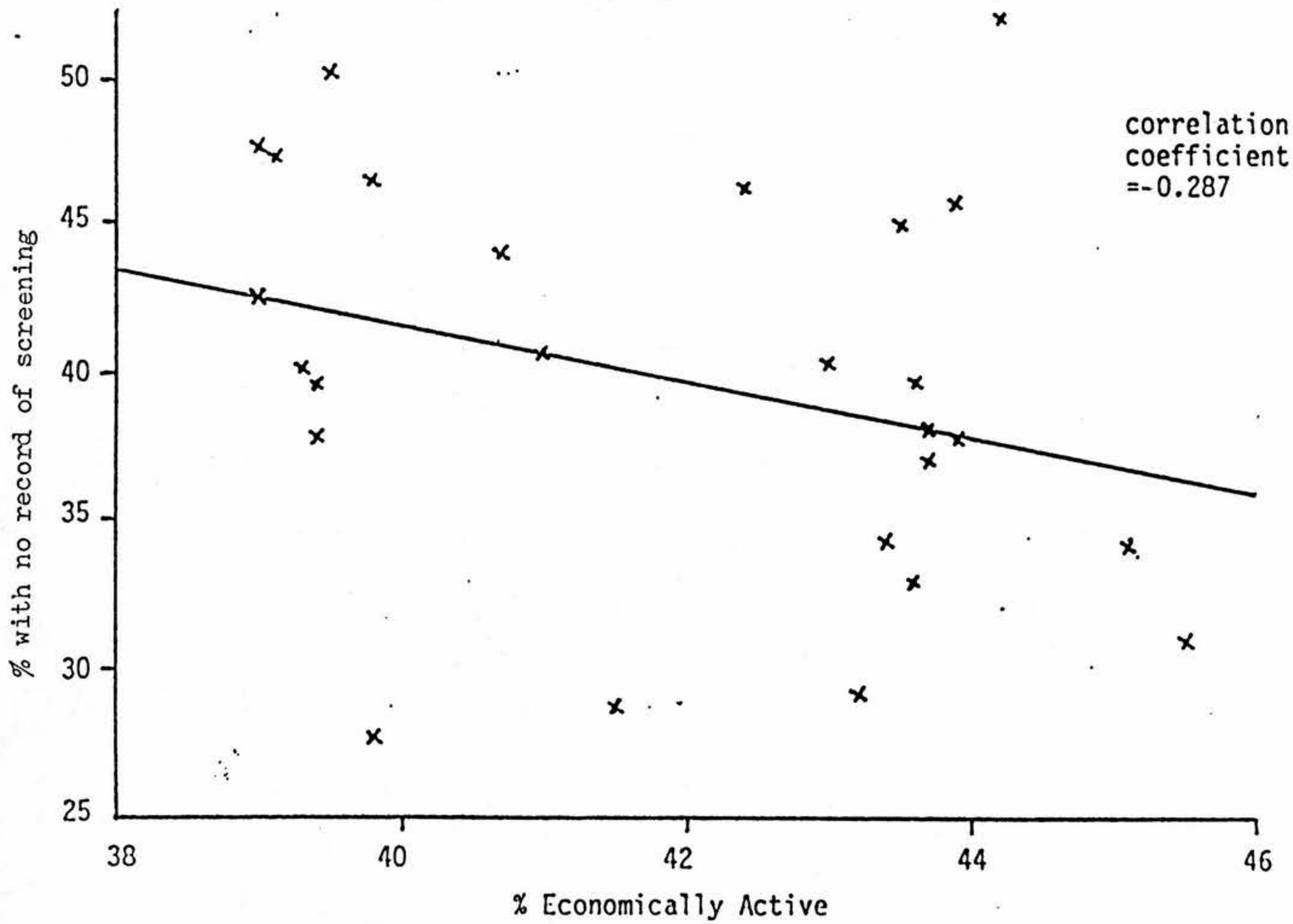
Practice Population Unscreened by % Economically Active Males in Mining - Chesterfield August 1985



Correlation coefficient = 0.32

FIGURE 8.4

Practice Population Unscreened by Females Economically Active
Chesterfield, August 1985



lower social classes, and families of the unemployed, are less likely to take advantage of screening opportunities than women from better off families.

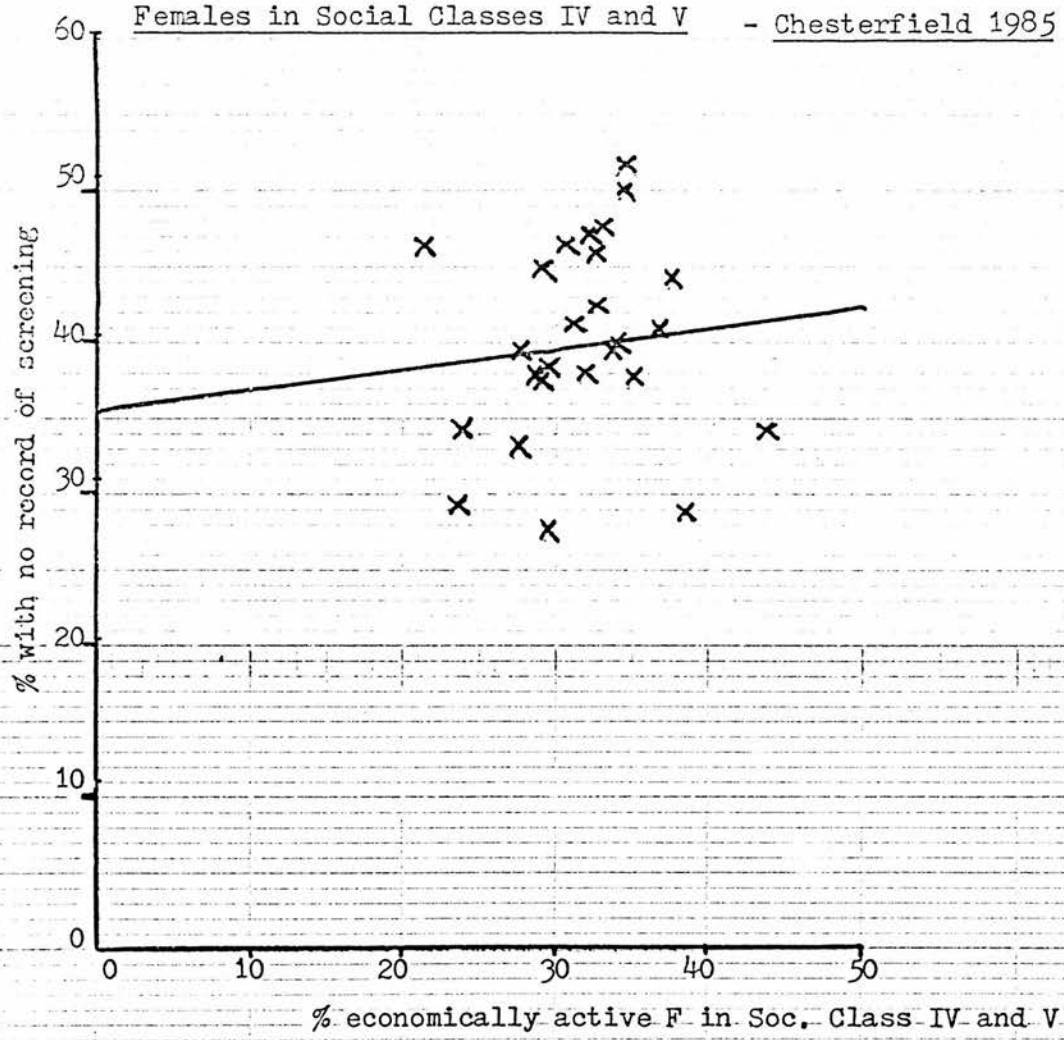
The proportion of men in mining occupations (Chesterfield being the centre of the North Derbyshire coalfield) varied between 7.0% in Practice D and 7.1% in Practice I to 18.4% in Practice J and 18.8% in Practice M, with Practice F an outlier again at 1.9%. A positive relationship is found between this variable and proportion of women with no screening history (r=0.32) (Figure 8.3). Again the practices with lowest proportion with no screening history are outliers, as is Practice S with the highest proportion with no screening history. The results of practice organisation suggest that this is probably an over-riding factor in the achievement of high population coverage in these practices (Chapter 7).

Female Employment

The range of women economically active between practices was small, from 39.1% in Practices J, M and X to 44.2% in Practice S and 45.5% in Practice N. A negative correlation was found between this variable and proportion ofwomen with no screening history (r= -0.287) i.e. the higher the proportion of women economically active the lower the proportion with no screening record (Figure 8.4).

FIGURE 8.5

Practice Population Unscreened by Proportion of Economically Females in Social Classes IV and V - Chesterfield 1985

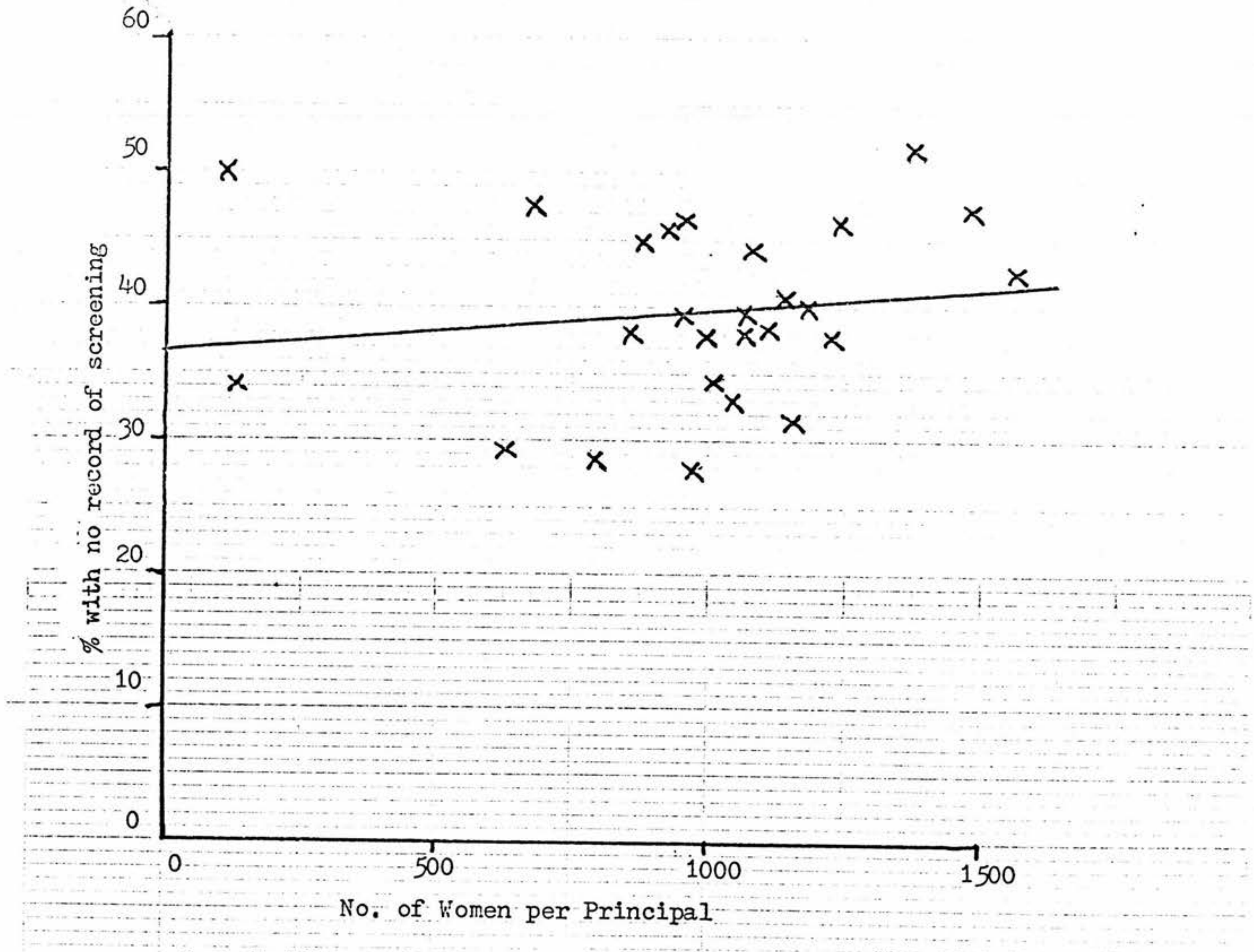


Correlation coefficient = 0.097

FIGURE 8.6

Practice Population Unscreened by Size of Practice

- Chesterfield 1985



Correlation coefficient = 0.152

A negative correlation was found with proportion of women in Occupational Orders 1 and 2 (Professional) (r= -0.176). The proportion of women in Social Class IV and V by virtue of their own employment varied from 23.7% (Practice A) to43.7% (Practice O). There was little correlation with screening record (r=0.098) (Figure 8.5). These results indicate that where women receive further education and skilled training for their own employment, there is likely to be a higher proportion who have been screened.

Between 1.5% and 3.2% of women are seeking work, and between 2.3% (Practice M) and 7.6% (Practice L) of economically active women are seeking work. Very little correlation was found between proportion of economically active women seeking work and proportion with no screening record (r=0.075).

Practice Size

The number of women per doctor (general practice principal) ranged from 106 in Practice P, and 123 in Practice E to 1472 in Practice X and 1551 in Practice J (Appendix K). A small degree of positive correlation was found between this variable and proportion unscreened (r=0.152) (Figure 8.6). It is possible that the two very small practices are still building up, and have not yet organised their screening programmes; the finding that GP list size is positively correlated with proportion unscreened suggests that doctors with a large practice population have less time to spend organising and implementing screening programmes, particularly in poorer mining areas possibly with more ill health and more consultations per head of population.

Multivariate Analysis

The 11 variables given in Appendix O plus number of women per doctor are used as the explanatory variables analysed against the dependent variable, proportion of women aged 20-64 with no screening history. The dependent variable in this analysis is a percentage, and therefore is expected to vary according to 'binomial' variance. A weighted regression was used, with weights inversely proportional to the variances of the individual values of the dependent variable. The data were fitted using GLIM for all 26 practices; analysis demonstrates a significant relationship between the variables ($F=2.356$, $0.1>p>0.05$). The 12 explanatory variables together account for 68.5% of the variation in proportion screened.

A stepwise weighted regression, using backwards elimination at the 5% significant level, results in a model containing 5 of the explanatory variables:-

1. % economically active females in Social Classes IV and V.

2. % households in council housing.
3. % employed men in Social Class IV and V.
4. % males seeking work (as a proportion of economically active males).
5. Number of women per G.P.

These 5 variables together account for 61.5% of the variation in proportion with no screening history ($F = 6.394$; $p<0.05$). Certain factors previously found to be correlated to the proportion with no screening record in a practice are closely related to these 5 factors, e.g. proportion of employed males in mining is highly correlated to proportion in council housing ($r = 0.52$).

The explanatory variables derived from census data are 4 years out of date compared with the dependent variable, and some will have changed in that time, e.g. % economically active persons seeking work; % households in council housing; % with no bath or WC. Thus the results may not be totally valid. Additionally the explanatory variables are derived from the population covered by practices which overlap in the bounderies, and a more accurate analysis would have been based on screening by area of residence rather than practice. This would require FPCs to collect and analyse data using post codes.

Summary

1. Women in Council housing are less likely to be screened. Housing type demonstrates a positive correlation with proportion with no screening history.

2. A small positive correlation was found between proportion of men economically active, employed men in Social Class IV and V and male unemployment, and proportion of women with no screening record.

3. A stronger positive correlation was found for proportion of men in mining occupations and proportion of women with no screening record.

4. The higher the proportion of women economically active, particularly in professional occupations, the lower the proportion with no screening record.

5. There was a lesser relationship between female unemployment and screening; women in professional occupations are more likely to be screened, and those in Social Class IV and V by virtue of their own employment are less likely to be screened.

6. Larger practices had screened fewer women.

7. 5 variables (females in Social Class IV and V, Council housing, males in Social Class IV and V, males seeking work, and practice size) accounted for 61.5% of the variation in proportion with no screening history.

8. Collection of data including post codes would provide a more valid basis for this type of analysis.

CHAPTER 9

RESULTS - SURVEY OF UNSCREENED WOMEN

This chapter reports the findings of the Survey of Unscreened Women aged 45-59 and a sample of screened controls in four of the 26 practices (Women's Health Survey) which was carried out in September 1985. A detailed analysis of the results is given in Appendix P.

Examination of data from the FPC computerised register suggested that there would be up to 1257 unscreened women in the 4 practices, increasing from 32% of all women aged 45-49 to 48% aged 55-59. This turned out to be an underestimate of the proportion screened, probably due to incomplete screening data returned from the NHS Central Registry for 1979-1981, and lack of earlier data. These practices are well organised practices using an age-sex register to identify unscreened women, and screening levels were expected to be higher than less well organised practices; these practices are identified as Practices B, C, H and N (see Chapter 6). From the records in the 4 survey practices it was calculated that the actual proportion of women aged 45-59 screened in these 4 practices was 89.7%.

Table 9.1

RESPONSE TO QUESTIONNAIRE SURVEY BY AGE;

PRACTICES B AND H

AGE GROUP	SCREENING HISTORY	
	UNSCREENED %	SCREENED %
45 - 49	63.5	75.7
50 - 54	73.3	89.6
55 - 59	80.5	81.5

Table 9.2

CHARACTERISTICS OF NON RESPONDERS - PRACTICE B

CHARACTERISTIC	SCREENING HISTORY	
	UNSCREENED (%) n = 33	SCREENED (%) n = 11
Age: 45 - 49	27.3	-
50 - 54	27.3	18.2
55 - 59	45.5	81.8
Marital Status:		
Married	72.7	63.6
Single	12.1	18.2
Widowed/Divorced	-	27.3
N/K	15.2	9.1
Health:		
Good	57.6	36.4
Reasonable	12.1	27.3
Chronically ill	3.0	9.1
N/K	27.3	27.3
Last saw G.P:		
- within 24 months	48.4	72.8
- more than 24 months	30.3	27.3
- N/K	21.2	-
Hospitalised with last 12 months	6.1	-

Response Rate

Completed questionnaires were received from 246 unscreened women and 302 screened women. Due to confidentiality agreements, detailed analysis of response rate was difficult. It was not possible to estimate the response rate at all in Practice C. In the remaining three practices 75.8% of unscreened women and 87.2% of screened women responded to the postal questionnaire. A detailed analysis by age group was only possible in two of these practices (B and H) and is shown in Table 9.1. Older unscreened women had a higher response rate than younger unscreened women. Age did not affect the response rate of screened women.

A survey of non-responders was carried out from practice records in one practice (B). Information available from practice records was age, marital status, state of health, time since last seen by general practitioner, and hospitalisation. Due to time constraints no attempt was made to follow-up non responders by personal visit. Clinical records were examined for 44 non responders; 33 unscreened women, and 11 screened women.

Table 9.2 shows the results of this survey. Screened non responders were older, less likely to be currently married, less likely to be in good health and more likely to have visited their general practitioner within the

TABLE 9.3

WOMEN PARTICIPATING IN THE WOMEN'S HEALTH SURVEY BY AGE AND PRACTICE

	SCREENING HISTORY	
	UNSCREENED (%) N = 246	SCREENED (%) N = 302
Age: 45 - 49	18.3	16.2
50 - 54	26.0	26.5
55 - 59	55.7	57.3
Practice: B	42.7	30.8
C	5.7	16.2
H	28.9	29.1
N	22.8	27.2

Table 9.4

SOCIAL CHARACTERISTICS - ALL PRACTICES

WOMEN'S HEALTH SURVEY

CHARACTERISTIC	SCREENING HISTORY		SIGNIFICANCE (X^2 TEST)
	UNSCREENED % n = 246	SCREENED % n = 302	
Marital Status:			
Single	13.8	3.0	p < 0.001
Married	68.7	78.1	0.05>p>0.025
Other	17.5	18.9	n.s.
Parity:			
Nulliparous	26.4	11.3	p<0.001
1-2 pregnancies	48.8	54.9	n.s.
3 or more pregnancies	21.5	30.4	0.025>p>0.05
Social Class by husband's occupation:			
I - III M	49.2	66.2	
IV - V	24.0	24.5	
NA/NK	26.8	9.3	p<0.001
Education:			
Left school at 15 or less	77.6	73.5	n.s.
Nursing school	3.7	3.3	n.s.
University or college	10.1	12.2	n.s.
Other	2.4	6.0	0.05>p>0.025
Housing:			
Owner occupied	61.8	64.6	n.s
Local Authority	31.3	32.1	n.s
Other	6.5	3.0	

previous two years, indeed 6 unscreened women (18%), but only one screened woman (9%) had not been seen for more than five years. However, no screened non responders had been hospitalised within the previous 12 months compared with two unscreened non responders.

Age of Unscreened Women in 4 Study Practices

Table 9.3 shows the practice and age structure of women responding to the questionnaire. There was some variation between practices; practices B and C had a high proportion of women aged 55-59, and practice C had no responders in the 45-49 age group. This practice had a higher than average proportion of women with a record of screening (72.4%) on the FPC register. The practice age-sex records were not validated. Overall the age range of women participating did not differ significantly between unscreened and screened women.

The Effect of Social Characteristics on Screening History

1. Marital Status

Unscreened women were more likely to be single and less likely to be married than screened women (Table 9.4); overall 14% of unscreened women were single and 80% of single women in the sample were unscreened. This difference was present in all three age groups, being most marked at 50-54 where a quarter of unscreened women were single.

It was expected that more single women would be unscreened due to less opportunities presented through child-bearing and family planning attendances; also it is likely that women not sexually experienced would not seek screening.

In both screening categories the proportion of women who were widowed or divorced rose with increasing age; overall more than half these women had been screened.

2. Obstetric History

Unscreened women were more likely to be nulliparous than screened women (Table 9.4). More than a quarter of unscreened women had never had a pregnancy, and two thirds of the 74 nulliparous women in the sample had never been screened. This difference was more marked in the younger age groups; at 55-59 less than half the nulliparous women had had a cervical smear.

This finding was closely related to the previous finding; 84% of single women were nulliparous, and 28% of all nulliparous women were single <u>and</u> unscreened. It is probable that these women were not sexually active, and were probably of low risk.

At the other end of the spectrum, half of all parous women in the sample, and particularly 37% of multiparous women (i.e. the 145 women with 3 or more pregnancies) had not been screened; 1 in 5 unscreened women had had 3 or more pregnancies; these women are likely to be at high risk of developing cervical cancer, and constitute a target group in the government's screening campaign.

Amongst women who were aged under 20 at their first pregnancy, a risk factor for the development of cervical cancer, no difference in screening history was found. This refutes the hypothesis that women who were very young at their first pregnancy are less likely to be screened.

3. Socio-Economic Characteristics

Lower social class women were less likely to be screened than those belonging to higher social classes (Table 9.4). Social class was analysed for all women by husband's occupation, but for 18% this was either not applicable or not known, and unscreened women were more likely to be single. 44% of the 133 women falling into social classes IV - V were unscreened compared with 38% of the 321 women in social classes I - III M.

In this sample husbands working in professional and managerial occupations were more likely to have wives who had been screened. Significantly more husbands in both selling and transport had wives who were screened; transport operating, materials moving and storing account for 10% of wives, three quarters of whom had been screened. This contrasts with wives of men in processing, the largest occupational group containing a quarter of the whole married sample; little over half of these wives had been screened.

It is possible that these differences are attributable to the fact that men in selling and transport go out and about meeting many different people in the course of their work, whereas men in processing are confined to the factory working daily with the same people and probably are less likely to be exposed to new ideas.
56% of all women were not working; more than half of these women in the study had been screened, but of unscreened women, a higher proportion was not working. The screened group contained a higher proportion of women in social class IV and V by virtue of their own employment than did the unscreeened group; 60% of all women in social classes IV and V classed by their own employment in the survey had been screened. Whilst it is acknowledged that these results lack validity since a matched pairs analysis has not been possible, it is probable that working greatly improves the chances of women in the lower social classes being screened, probably through social contact and greater exposure to discussion with screened women, and possibly through occupational health departments and health education.

Women working in clerical jobs, and in catering, cleaning, hairdressing and other personal services, the two most popular occupational groups for employed women, were found to have a high proportion who had been screened.

Education did not make a significant difference to a woman's chance of being screened (Table 9.4). No difference was found between the two groups' school or college background. There was however a difference in women who had obtained 'other' post school education. This could be a group of enterprising women who have sought Open University courses etc. These women may be those who have developed a positive attitude to life, which includes an attitude to disease prevention, explaining the significantly higher proportion of these women in the screened group.

No significant difference was found in the type of housing occupied by screened and unscreened women (Table 9.4). It was expected that women in poorer socio-economic circumstances occupying Local Authority housing would be less likely to be screened; this was not borne out by the results of this survey. The only difference to emerge was among a small group of women occupying privately rented accommodation, there were significantly more of these women in the unscreened group. This group may constitute a group of people of unsettled abode who have not organised their lives, or planned for the future.

Table 9.5

Health Status and Opportunities for Screening

FACTOR	SCREENING HISTORY		
	UNSCREENED (%) n = 246	SCREENED (%) n = 302	SIGNIFICANCE (X^2 test)
Health during previous 12 months:			
- good	43.5	37.7	n.s
- fairly good	44.7	48.0	n.s
- not good	11.4	13.9	n.s
Contact with doctor during previous 2 weeks	11.0	14.6	n.s
Hospitalisation during preceding 18 months	8.5	9.6	n.s
Hospitalised for birth of child	59.8	73.8	$p<0.001$
Attended for family planning advice	9.3	27.2	$p<0.001$

Health Status and Previous Opportunities for Screening

1. Contact with Medical Services

It is postulated that contact with medical services provides an opportunity for screening. This hypothesis is confirmed by the results of this survey. Women were asked about their general state of health, recent contact with a doctor and recent episodes in hospital.

More unscreened women than screened reported their state of health during the past 12 months had been good and less that their health was not good (Table 9.5). These differences did not reach statistical significance; however, 74% of unscreened women confirmed they did not suffer long term illness or disability compared with 68% of screened women, this difference was significant ($0.1>p>0.05$).

More screened women had been in contact with a doctor, either face to face or by telephone, during the previous 2 weeks (Table 9.5). This again did not reach statistical significance. The proportion in the two groups who had recently been in hospital were very similar.

2. Place of Confinement

Women who have been under the care of a gynaecologist may be more likely to be offered a cervical smear test. The women in this survey were aged 45-59 and it was inevitably some 10-40 years since their childbirth experiences. Older women may not have had a smear even if delivered in hospital 40 years ago, also the proportion of all women having babies in hospital has increased over the years so that older women in this sample would have been less likely to have had their babies in hospital.

Overall three quarters of all screened women had had a baby in hospital compared with 60% of unscreened women. The differences were greatest in the youngest age group, but nearly 30% of all unscreened women in this age group were nulliparous. The gap narrows to only a 10% difference at 55-59, which can again be accounted for by parity differences; the proportions having babies only at home were similar at this age.

The proportion of unscreened women who had not had a pregnancy confounds the result at all ages, but overall a higher proportion of unscreened women had had solely home births; the difference is not significant.

3. Family Planning

Family Planning Clinics have been carrying out cervical smears for many years. Family planning attendance presents an opportunity for screening, and women attending might be expected to develop the screening habit.

Women were asked whether and where they attended for family planning advice. Overall more than a quarter of screened women had attended at some time, compared with less than 10% of unscreened women. This difference persisted in all age groups; at 45-49 more than half of all screened women had obtained family planning advice compared with only 17% of unscreened women. As age increased the proportion who had ever attended decreased, only 6% of all women aged 55-59 in the survey sample had attended for family planning advice.

Amongst attenders for family planning advice screened women were only slightly more likely to have attended a Family Planning Clinic; overall 65% of attenders had been to a Clinic at sometime.

It was expected that few older women would have attended for family planning advice, as Family Planning Clinics have only become popular in the last 20 years. The first clinic in Sheffield opened 50 years ago, but in Chesterfield the laboratory did not begin screening until 1963 and the first clinic opened in 1964. Women aged 55 and over would have been nearing the end of their child bearing life in the mid 1960s.

Lifestyles and Attitudes to Health Promoting Habits

It was hypothesised that people with a positive attitude

Table 9.6

LIFESTYLE AND ATTITUDES TO HEALTH PROMOTING HABITS

CHARACTERISTIC	SCREENING HISTORY		SIGNIFICANCE (X^2 TEST)
	UNSCREENED % n = 246	SCREENED % n = 302	
Smoking:			
Never smoked	41.1	35.1	n.s.
Ever smoked:			
- ex smoker	28.9	33.4	n.s.
- current smoker	28.9	31.1	n.s.
Smoking can damage health:			
- Yes	60.8	69.1	$0.05>p>0.025$
- Not in moderation	37.1	28.2	$0.05>p>0.025$
Drinking:			
Never drink	19.2	12.3	$0.025>p>0.01$
Drinker:			
- occasional	41.5	41.7	n.s.
- regular	29.1	45.7	n.s.
Drinking can damage health:			
- Yes	20.2	21.2	n.s.
- Not in moderation	72.8	73.8	n.s.
People should be encouraged to eat all foods mentioned:	74.5	82.1	$0.05>p>0.025$

to health, as evidenced by a non-smoking, restricted drinking, healthy eating, lifestyle, would be more likely to seek screening as a preventive measure for cervical cancer.

More unscreened women had never smoked, the difference is not significant (Table 9.6). Correspondingly more screened women had at some time been smokers; of these a slightly higher proportion than of unscreened women had given up smoking; even so more screened women were current smokers, with a significant difference for those smoking 20 or more a day - 1 in 15 unscreened women compared with 1 in 9 screened women.

Significantly more screened women than unscreened believed that any smoking could damage health; nearly 40% of unscreened women believed that in moderation smoking was not harmful.

This pattern is repeated for alcohol consumption. Nearly 1 in 5 unscreened women totally abstained from drinking compared with 1 in 8 screened women (Table 9.6). Occasional drinkers were in similar proportions whilst there were more regular drinkers amongst the screened women. There was no difference between the two groups in their belief that drinking was harmful to health, overall 20% of women held this belief.

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Screened women were more likely to hold positive attitudes to healthy eating. More than 4 out of 5 screened women believed people should be encouraged to eat brown bread, cereals, more fruit and vegetables and less animal fat, compared with three quarters of unscreened women.

These findings are interesting. It is clear that unscreened women hold less strong views on the effect of certain lifestyles on health, yet actually lead healthier lives in terms of smoking and drinking. This does not translate to screening whereby it would be expected that even though these women might not believe in the value of screening, they would still be more likely, not less, to have had a smear. Screened women by contrast appear to lead more risk taking lifestyles. Beliefs in the efficacy of cervical screening will be addressed in the next section, but it would be helpful to carry out further analysis to demonstrate whether the unscreened women who do lead healthy lifestyles belong to low risk groups in terms of marital status and parity.

Beliefs in the Efficacy of the Screening Test and Treatment

The women in the study were asked whether check ups would detect an early form of cancer. No reference was made to the cervical smear in this question. The differences between unscreened and screened women are highly

Table 9.7

BELIEFS IN THE EFFICACY OF THE SCREENING TEST AND TREATMENT

BELIEF	SCREENING HISTORY		SIGNIFICANCE (X^2 TEST)
	UNSCREENED (%) N = 246	SCREENED (%) N = 302	
Check-ups detect early cancer:			
- Yes	63.4	86.8	$p<0.001$
- sometimes	26.0	9.9	$p<0.001$
- don't know	8.1	3.0	$0.1>p>0.05$
Check-ups enable treatment at a curable stage:			
- Yes	60.2	87.4	$p<0.001$
- sometimes	24.8	7.6	$p<0.001$
- don't know	11.8	4.0	$p<0.001$
Effect of early treatment:			
- cure	42.7	47.6	n.s.
- better chance of cure	48.8	47.6	n.s.

significant (Table 9.7). Screened women were very confident that check ups would enable early detection of the disease, with nearly 9 out of 10 women holding this belief. In contrast only 6 out of 10 unscreened women were this confident, a quarter believed that sometimes cancer can be detected at an early stage and 1 in 10 did not know.

The confidence of unscreened women fell with age. Two thirds of the 45-49 age group believed that early disease would be detected, falling to just over a half of the 55 - 59 group. Screened women did not show such a loss of confidence with age. This may be related to marital status and parity differences in the age groups. Screened women showed similar levels of confidence in the ability of the check up to enable treatment at a curable stage. Overall 9 out of 10 women who replied that check ups would detect an early form of cancer also believed that this would enable treatment at a curable stage, compared with 4 out of 10 women who thought that only sometimes would the check up detect an early form of cancer.

The two groups did not show such marked differences in their belief in the efficacy of early treatment. Asked whether early treatment would make any difference, nearly half, slightly more of the unscreened women than screened, believed a cure was certain, and similar proportions, again just under half, of both groups believed it offered

Table 9.8

PERCEPTIONS OF VULNERABILITY TO CERVICAL CANCER

	SCREENING HISTORY		
	UNSCREENED (%) n - 246	SCREENED (%) n = 302	SIGNIFICANCE (X^2 TEST)
Do you think it likely you might get cervical cancer?			
- Yes	6.1	6.3	n.s.
- Possible	29.3	37.4	0.05>p>0.025
- No	13.8	12.6	n.s.
- Don't know	47.2	41.7	n.s.
Have you had a cervical smear?			
- Yes	26.0	83.8	
- No	62.2	8.6	
- Hysterectomy	9.8	7.6	

a better chance of cure. Significantly more unscreened women (1 in 15) answered that they did not know.

Whilst it is debatable which are the correct answers to these questions, these findings confirm a need to educate unscreened women, particularly those in the older age group, about the smear test itself, how it is taken, what it does, how it can provide information about the status of a woman's cervix. Both groups need more information about treatment methods. This survey was carried out at a time when Colposcopy was new in Chesterfield, probably few women had heard about its benefits and such intervention is now carried out earlier in the course of investigation.

Perceptions of Vulnerability to Cervical Cancer

Women were asked whether they thought they were likely to get cervical cancer. Screened women were significantly more likely to feel vulnerable than unscreened; nearly 4 out of 10 screened women still thought it possible they could develop cervical cancer compared to less than 3 out of 10 unscreened women (Table 9.8). This suggests that the more vulnerable a woman feels, the more likely she is to go for screening.

Nearly half the unscreened women did not know whether they might develop this disease, but over 4 out of 10 screened women also still felt they did not know. Very few women were reassured by the screening test, in fact it is likely that the confidence expressed by the 1 in 8 screened women who said they cannot develop cervical cancer is not attributable to the screening test at all, since a similar proportion of unscreened women also believed they were unable to develop the disease, and 1 in 10 women said they had had a hysterectomy. That screened women are more likely to take action may be attributed to an increased perception of vulnerability.

A quarter of unscreened women thought they had had a cervical smear; 1 in 10 screened women thought they had not. Screened women who thought they had not had a smear mostly belonged to one practice. These findings probably reflect communication between doctor and patient; earlier studies found that many women did not know when they had had a smear taken; a doctor should explain what is being carried out, perhaps the women are ignorant about their bodies and do not understand what such a smear is. It is also possible that through lack of communications the GP has not received notification of smears carried out, although it is routine in Chesterfield to send the GP a copy of the result.

Assuming the G.P. record systems are valid, the proportion of women thinking they have had a smear when they have not alone indicates a need to educate and inform women about the procedure, its purpose and meaning.

Table 9.9

CUE TO SCREENING

HEARD OR READ ABOUT SMEAR	SCREENING HISTORY		SIGNIFICANCE (X^2 TEST)
	UNSCREENED (%) n = 246	SCREENED (%) n = 302	
Yes	32.1	57.6	$p<0.001$
No	56.5	36.8	$p<0.001$
Don't know/ no reply	11.4	5.6	$0.005>p>0.025$

Women were asked an open-ended question which sought to ascertain awareness of risk factors for cervical cancer; 'What sort of woman do you think is more likely to get cancer of the cervix (neck of the womb)?' Two out of 15 unscreened women did not answer this question, neither did 1 in 10 screened women. Half the unscreened women who replied said they did not know. This was significantly higher than for screened women where 4 out of 10 did not know. Of the women who thought they knew, the most common reply was a promiscuous woman; 1 in 5 women gave this answer, and 1 in 7 women said any woman could develop cervical cancer. 1 in 7 women mentioned sexual activity, over half of these suggesting that sex at an early age was a contributory factor. Others mentioned several pregnancies and age as important factors. There was no difference in replies between screened and unscreened women.

Cues to Screening

Women were asked whether they had heard or read anything to suggest they should go for a cervical smear. There were highly significant differences between the two groups. Only one third of all unscreened women replied in the affirmative compared with nearly two thirds of screened women (Table 9.9). Over half the unscreened women said no, they had not.

Reading or hearing about a smear significantly appears to influence a woman's feelings of vulnerability to cancer. Taking all women in the sample together, those who had read or heard about the smear were significantly more likely to believe it possible, or indeed likely that they might contract cervical cancer, and less likely not to know.

Reading or hearing about a smear also significantly influences women's belief in the ability of a check up to detect cancer at an early stage. 86% of those who had read or heard about the smear believed the check up could detect disease compared with 70% of those who had not.

Similarly women who had read or heard about a cervical smear were significantly more likely to believe in the effectiveness of early treatment. The proportions were virtually the same as those who believed that a check up will detect early cancer, hardly surprising as 90% of women who believed check ups detect early cancer also believed in the effectiveness of treatment.

Reading or hearing about the test appears to have had a greater influence on unscreened women than screened women, raising the proportion who believed in the efficacy of screening from 54% to 78% compared with an increase from 85% to 91% in screened women. It can, of course, be argued that unscreened women had further to go, but also

Table 9.10

SCREENING HISTORY BY OPINION WHY OTHER WOMEN DO NOT ATTEND

REASON FOR OTHER WOMEN NOT ATTENDING	SCREENING HISTORY		SIGNIFICANCE (X^2 TEST)
	UNSCREENED (%) N = 216	SCREENED (%) N = 292	
Embarrassment	37.0	76.0	$p<0.001$
Fear	45.8	53.8	n.s.
Ignorance	9.7	7.9	n.s.
Don't want to	8.8	2.1	$p<0.001$
Neglect/complacency	5.1	4.1	n.s.
Prefer woman doctor or nurse	3.2	7.9	$0.05>p>0.025$
Don't know	13.0	7.9	$p<0.001$

that this demonstrates the effectiveness of education or propaganda.

Reasons for Non-Attendance

Women were asked why they thought other women did not attend for screening. This was an open-ended question drawing a variety of answers, which have been collated in categories for the purpose of presentation. These were not the only reasons given, additional points were made, and many women gave several reasons.

30 unscreened women (12.2%) and 10 screened women (3.3%) did not reply. Table 9.10 takes account of responders only. 1 in 8 unscreened women and 1 in 13 screened women said they did not know why others did not attend.

Two main reasons were given for non-attendance by others. The most common reason with screened women was embarrassment; three quarters of screened women gave this compared with only just over a third of unscreened women. This difference is highly significant. It is possible that screened women imagine other women are embarrassed to attend because they themselves find the experience unpleasant.

Fear was the most common reason for non-attendance given by unscreened women. The proportions giving this reason were again greater for screened than unscreened women (just over half compared with just under half). Women mentioned fear both of the experience and the result. 1 in 7 unscreened women and 2 in 9 screened women gave both fear and embarrassment as a reason.

Other points made by both groups of women include ignorance, women not wanting to have a smear, neglect, complacency, and preference for a woman doctor or nurse. 1 in 11 unscreened women said that women did not want a smear.

The generally held opinion that women prefer a woman doctor, and that under provision may be the cause of non-attendance, is not substantiated by this study. Only 7 unscreened women altogether mentioned this reason. However, this study does make clear the two main areas to be tackled, both in terms of health education and service provision, and these are embarrassment and fear. This applies as much to women already in the screening system as those not yet included.

SUMMARY

1. 14% of unscreened women are single and a quarter are nulliparous, and probably constitute a low risk group. 1 in 5 unscreened women have had 3 or more pregnancies and therefore belong to a high risk group.

2. There are occupational differences between the screened and unscreened. Women working in clerical or public service jobs are likely to have been screened, as are those whose husbands have jobs where they are out meeting the public. In contrast wives of factory workers are poorly screened.

3. Unscreened women tend to be healthier than screened women, and make less contact with the health care system, thus reducing their opportunities for screening. Those who have attended Family Planning Clinics appear to have developed the 'screening habit'.

4. Screened women are much more likely to believe that check-ups enable early detection of cancer than are unscreened women. These beliefs have been reinforced by propaganda.

5. Unscreened women are less likely to take risks, e.g. smoking, drinking, and feel less vulnerable to cervical cancer; this is reflected in the action taken by screened women in attending.

6. Fear and embarrassment figure as the main reason given for non-attendance by both sets of women, but significantly more screened women cited embarrassment, possibly reflecting their own experience.

CHAPTER 10

DISCUSSION

The aim of this study was to examine the population coverage achieved by local cervical screening programmes, and to determine which system was the most successful in terms of the proportion of women screened, and how to maximise population coverage. The objectives included evaluation and comparison of Family Practitioner Committee based and General Practitioner based recall and call systems, and the identification of the unscreened population together with recommendations for future screening arrangements.

The long natural history of cervical carcinoma, and the availability of an effective treatment in the early stages of the disease, make this a suitable condition for screening. The screening test meets all the criteria, is acceptable to the patient, and cheap to administer. The issue of adequacy of specimens and the need for quality control mechanisms in ensuring consistency of results was examined in detail; without such basic provision a cervical screening programme cannot be successful in the optimisation of the sensitivity and specificity of the test.

Studies of the natural history of cervical carcinoma indicate that the disease is detectable at a pre-invasive stage, Cervical Intra Epithelial Neoplasia (CIN), by cytology, and that up to 60% of these pre-invasive lesions will progress to invasive disease over 6 to 20 years, with a few progressing more rapidly, sometimes in a matter of months. Regression to normal occurs in up to 50% but these figures have been difficult to estimate due to surgical intervention in many cases.

Experience with screening programmes in this country has so far been disappointing since cervical cytology was introduced on a wide scale around 1964. Mortality has declined very little, and overall figures conceal an increase in the younger age groups (Draper & Cook 1983). Countries such as Finland, Iceland and British Columbia whose programmes have been organised with a specific objective of mortality reduction, on a population basis rather than a laboratory basis, who concentrate on high risk age groups, and call women who have never been screened using population registers, have demonstrated a reduction in mortality which continues to fall; those women who do develop cervical cancer are mostly women who have never been screened.

In this country there have been frequent changes in recommendations for screening, culminating in a complicated policy of ages and risk groups, but primarily, where the policy is now to concentrate on older women, no one has been held responsible for implementation of the programme (Lancet, 1985). Until recently, it has not been technically possible to organise population based programmes, and even now only parts of the country have the mechanism. There still exists a diversity of systems, ranging from G.P. based manual age-sex registers, through G.P. computers, to FPC and electoral roll based systems either manually or computer held. Exeter Family Practitioner Services Unit has developed a computerised recall and call module to run on the FPC computerised register, but its effectiveness will depend on the validity of the information held, and the ability of those running the programme to devise effective methods of ensuring attendance.

Implementation of the 1984 DHSS guidelines, with particular emphasis on older women, was taken as a basis for the development of the present study, which examined in detail the screening patterns in 26 Chesterfield practices, relating the proportion with no screening record to details of practice organisation and socio-economic information, and including a detailed survey of older unscreened women.

Survey Methods

This study has enabled an evaluation of screening in two 12 month periods in a defined population using screening information entered on the Derbyshire FPC computer relating to the period 1979-1985. Analysis of this data provided information on screening in two 12 month periods 1982-1983 (no recall) and 1983-1984 (recall operation), and details of women with no record of screening.

Data analysis was not linked between the two years and therefore it was not possible to identify the number of women re-screened. Provision in the specially written programme for the analysis of screening frequency could not be utilised due to changeover of software at the FPC.

Despite the problems which arose during the course of analysis of the FPC data, it has been possible to provide meaningful results relating to the pattern of screening in individual practices. Figures for the proportion of unscreened women are high probably due to loss of data between the NHS Central Registry at Southport and the FPC, as evidenced by detailed analysis of practice data from 4 practices for the Survey of Unscreened Women (Women's Health Survey). It is likely that variation between practices is real, indeed much of the data relates to screening during 2 specific years for which it was known that ascertainment of data was complete due to by-passing of the NHS Central Registry.

Choice of the 26 practices studied was made on the basis of a questionnaire survey indicating use of laboratory.

Two practices included were found to have a small proportion of patients screened elsewhere than Chesterfield, and this may have led to under-estimation of the proportion screened; both practices have a higher than average proportion with no screening record.

Data obtained by practice surveys relating to practice organisation and geographical location are complete in terms of response rate, but are somewhat unsatisfactory in other respects. The organisation survey was directed to the senior partners, but in practice it is possible that some practice partners operate on an individual basis and different policies may exist within a practice. The question relating to common policy was not satisfactorily answered; in fact the questionnaire was sent to all practices in North Derbyshire, and in the few practices where this question indicated there was no common policy, further copies were sent to other partners, but response from these was poor and in some cases the answer to this question did not agree with the senior partner.

Use of the small area map provided the best possible means of providing geographical information given that FPC addresses were not post coded. There were, of course, overlap problems between practice boundaries and across electoral ward boundaries, and consequently uncertainties about practice population density within an area, although all practices showed no hesitation in demonstrating the area they covered. The assumption was made that the population of the area covered by the practice was representative of the practice population.

The influence of socio-economic factors on presentation for screening was explored in greater depth in the Survey of Unscreened Women (Women's Health Survey), aimed at older women since this is the group given priority by the DHSS, the screening data from the FPC computer indicated this was the least screened group and also this group has the highest mortality. Additionally this survey explored the health beliefs and attitudes of unscreened women.

Much of the information sought by this survey had been explored in previous studies, but these studies were up to 15 years out of date and related to responders to recall rather than surveying an identified population of unscreened women. This study sought to make comparisons between unscreened women and screened controls. No study was found in the literature which related to an unscreened population. The controls were matched for age and general practice, and consequently for neighbourhood.

The survey design was intended to eliminate bias resulting from women feeling they had been selected as not having attended for cervical screening. This was achieved by naming the study the 'Women's Health Survey' and by the wide variety of questions addressing demographic details, socio-economic history, health, and health related attitudes and beliefs, besides cytology specific questions.

None of the replies indicated any dissatisfaction amongst the patients relating to the choice of questions. Response was lower in the unscreened than screened group, as was expected as they had been selected for their 'response' (i.e. unscreened they were already 'non responders' to attendance for screening). In both groups however, a very high and satisfactory response rate was obtained, possibly attributable to the fact that questionnaires were sent directly by and returned to the general practitioners. Non responders were healthy, half had not seen their GP for more than two years, and three quarters were unscreened.

Many of the questions had been previously validated by use in other surveys. New questions were tested by a pilot study and alterations made where appropriate. Open-ended questions posed a certain amount of difficulty in coding, and a predetermined choice of answers may have been easier, though could have detracted by putting ideas into the minds of those surveyed.

Summary of Findings

1. Sufficient smears are being taken to screen every woman 5-yearly, but at present half the smears taken are from women aged under 35. Older women are the least screened.

2. There are large differences between practices, both in the proportion of women screened and by whom smears are taken; overall 4 out of 10 women had no record of screening on the FPC computer.

3. A systematic practice approach to recall involving a set interval for screening is achieving a higher proportion of screened women. The use of an age-sex register to identify unscreened women, and to supplement FPC data on those due for recall is an important factor in achieving higher population coverage.

4. Non-responders need to be followed-up; this is best done by letter or telephone.

5. Positive correlations were found between the proportion of women in each practice with no screening history, and proportion of households living in council housing, proportion of men economically active, proportion of men in social class IV and V and men in mining occupations; there was a negative correlation with economically active women.

6. Unscreened women include groups diametrically opposed with respect to risk, i.e. low risk, single and nulliparous women, and high risk multiparous women and smokers.

7. There are occupational differences between screened and unscreened women, both by their own and by that of their husbands. Women in public service and clerical jobs, and those who husbands are involved in transport and selling are well screened, whilst wives of factory workers are poorly screened.

8. Unscreened women tend to be healthier than screened women, and to make less contact with the health care system, thus reducing their opportunities for screening. Screened women are more likely to have had a baby in hospital, and particularly to have attended a Family Planning Clinic.

9. Screened women are more likely to believe that check-ups enable early detection of cancer than are unscreened women; these beliefs have been reinforced by receiving information.

10. Unscreened women are less risk taking but hold less positive attitudes than screened women in terms of smoking, drinking and nutritional habits and feel less vulnerable to cervical cancer.

11. Fear and embarrassment are major reasons for non-attendance given by both sets of women, but a significantly higher proportion of screened women cited embarrassment.

Results of the Study

1. Screening Activity

Analysis of screening activity in the Chesterfield area has shown that sufficient smears are being examined to cover the whole female population aged 20-64 once every 5 years. A boost to screening activity in 1983-4 which may have been brought about by the publication of evidence relating the use of the oral contraceptive to cervical cancer (Vessey, 1983), has been maintained in all practices, but there are still marked inequalities of service provision between practices. In some practices, well below the required number of smears for 5-yearly screening of every women aged 20-64 is taken each year, whilst others are screening nearly 1 in 3 women annually. It is apparent however, that much of the screening activity is aimed at younger women aged less than 35. We do not know how frequently these women are rescreened, but since 31% of women aged 20-34 have no smear record, it appears that 4493 smears in one year (1983-4) are distributed amongst 11652 women - who it can be deduced are probably being screened on average every two-and-a-half years. The high proportion of smears directed at younger women is reflected in the number of single and nulliparous women screened, confirming observations made by MacGregor & Teper (1978) that it is not the high risk women on whom resources are concentrated.

Practices vary considerably, not only in the proportion of women screened in a given time period, but also in the proportion of smears actually taken by the practice itself, and hence over which they can exert direct control. Practices which take their own smears do have a higher proportion of their women screened in a year, but it does not follow that these are the practices which are achieving a higher population coverage. Further analysis of the data would help clarify this factor.

The FPC based recall system had been running for 8 months when the analysis was carried out; it was shown to have very little impact on screening activity at this time, but may be expected to improve in its effectiveness with continued data entry which will facilitate checking of previous screening history, and provide a larger and more accurate database for those for whom recall is appropriate. This demonstrates the necessity for FPCs to enter cumulative screening data, preferably at least 5 years data.

A recall system alone cannot be expected to achieve maximum population coverage. It is only when a system able to identify unscreened women, to initiate call of these women, and follow-up non-responders, is operating, that the screening programme will prove to be effective. Even in these circumstances experience in the few enthusiastic practices running a call system based on the practice age-sex register indicates that it is likely there will still remain a hard core of women who are difficult to persuade to attend.

Analysis of women with no record of screening on the FPC computer has shown that at the time of analysis 4 out of 10 women aged 20-64 had no screening record, and that amongst older women aged 40-64 1 in 2 women had no screening record, the proportion unscreened rising with increasing age (the 35-39 age group was the group with the lowest proportion who had no screening record).

Clearly therefore, present screening arrangements are not only inequitable, but are concentrated on the lower risk age groups at the expense of older women in whom cervical cancer rates are considerably higher. This inequity may be a phenomenon which will correct itself over time as younger screened women age, if they continue to be screened regularly. The literature does not clarify at what age it is safe to stop screening, only that the more smears a women has had, the lower the relative risk of developing the disease. DHSS recommendations are that screening may cease at 65 if there have been two recent negative screens.

2. <u>Organisation Factors</u>

General Practices relying totally on the FPC recall list, without even checking it against previous records, are, not surprisingly, amongst those whose female population has the lowest proportion with a record of screening, particularly as no FPC call system was in operation at the time of the study. In contrast, practices who are identifying unscreened women through their age-sex registers, who have a specified policy with respect to age and frequency of screening, and who follow-up non-responders by letter or telephone, are achieving a high population coverage.

The effectiveness of a formal screening programme based in general practice was demonstrated by a review in 28 practices by Fleming, Lawrence and Cross (1985); in addition they found that practices with smaller list sizes and fewer patients belonging to social classes IV and V were more likely to perform effective preventive care. This finding is reinforced by the correlation between housing, economic activity and proportion with no record of screening in this survey. In both the present study and that performed by Fleming, the size of the sample of practices is small, whilst data aggregation from GP to practice as a whole means that the effect of individual variation between GPs is lost.

3. Social and Behavioural Factors

This study has identified 5 socio-economic factors which account for two thirds of the between practice variation in the proportion of women with no screening record. Most important are the factors which indicate poverty, such as unemployment and housing type; other factors are social class and economic activity. No single factor was outstanding in explaining inter-practice variation, and a more valid analysis of the screening data against census variables would have been possible had the FPC held postal code information on patients which would have facilitated electoral ward analysis.

The results of the survey show that unscreened women belong to a variety of risk groups; the Women's Health Survey has demonstrated that whilst 1 in 4 unscreened women are nulliparous, many of them single, and therefore probably having an extremely low probability of developing the disease, others fall into very high risk categories - multiparous, smoking, and wives of men in high risk occupations (OPCS, 1986) such as metal and electrical processors. Indeed there were interesting differences, important in terms of service provision in the screening history of those whose husbands were employed in different occupations, particularly factory wives who were more likely to be unscreened.

Further analysis of the data from this survey, particularly Cluster Analysis, would provide useful information relating to the size and characteristics of risk groups amongst the unscreened population.

4. Health Education

The Survey of Unscreened Women has demonstrated the value of visual and auditory material in reinforcing the reasons for and understanding of the screening process, and the groups of women who need to be targetted in a health education campaign linked to a screening programme aimed at previously unscreened women, i.e. ever married, parous women, wives of factory workers, and women who smoke. These women form the 'hard core'; they have proved elusive even in the face of effective call systems run by enthusiastic GPs.

In addition through this survey it has been possible to determine the content of education material in terms of the requirement to inform unscreened women about the disease itself, the test, how it is carried out and how it works, the meaning of the results of the tests and the effectiveness of treatment which would be offered to those whose test shows an abnormality.

It is apparent from this study that unscreened women are less likely to possess the relevant information which enables them to understand the need for the cervical smear test, or even to know what the test is. Many unscreened women are of an age that they have missed out on the service provided at Family Planning Clinics, or have had their babies at home and probably were not screened by a

Gynaecologist, and consequently have not become accustomed to the 'screening habit'. This is an important factor to bear in mind in designing screening programmes for these women.

5. Service Provision

The survey has highlighted problem areas in terms of provision of the cytology service. 7 out of 10 screened women indicated embarrassment as a reason for non-attendance; this is not related to provision of female staff, but is more likely to relate to structure and process of the service. Are women asked to undress before they meet the doctor, and to walk around the clinic in a dressing gown? Do staff take the trouble to be kind and considerate, and try to allay this embarrassment?

1 in 2 women both screened and unscreened expressed fear; fear of the process of screening and fear of the result. This can partly be alleviated by provision of information, but also requires sympathetic and knowledgeable discussion with the doctor or clinic staff.

These findings echo those of earlier studies which found that women who failed to respond to recall found the experience embarrassing (Sansom et al, 1975).

Issues Raised by the Study

The study therefore has provided a wealth of new information which needs to be built into the health care processes to optimise efficiency and effectiveness. The issues raised include:

1. Who should be responsible for running the screening programme?
2. Who should operate the screening programme?
3. How can response be maximised?

1. Siting of the Register and Initiation of Call/Recall

In this country there are 3 possible population bases for siting of the cytology recall and call systems; the electoral roll was rejected as a possibility because, although regularly updated, it is not sex specific, it does not carry the date of birth of those included, and cannot hold clinical data. The advantages and disadvantages of the FPC register and GP Age-Sex register were discussed in Chapter 3. These can be summarised as follows:-

FPC Register	GP Age-Sex Register
Centrally held.	Peripherally held.
Will be 100% computerised in near future.	Will take a number of years to be fully computerised and practices will always have the option to opt out.
Inaccurate in terms of removals and addresses (but linkage to Health Authority data bases will improve this).	Much higher degree of accuracy, patient turnover recorded sooner and addresses frequently updated.
Allows for comprehensive monitoring.	Local monitoring has the advantage of rapid feedback and action taking.

Many General Practitioners would argue that individual patients are their responsibility. They are well motivated to run an efficient system. There are others, however, who are less well organised and clearly need help with running an effective system. Some practices carry out very few cervical smears and are relying on the Health Authority to provide a service.

This study indicates that ideally, within an FPC or Health Authority area, an integrated programme may be devised, with enthusiastic G.P.s running their own programme, (possibly introducing different screening ages and frequencies), and the FPC running a recall and call system for less organised practices. The disadvantages of having all GPs in an FPC based system would be related to the inability of those running the system to tap the G.P.s' local knowledge of high risk groups; FPC lists do not hold such information, and the possibility of staff who know the women concerned being able to discuss with them the need for a test, and provide an explanation which would increase their knowledge of and confidence in the test, would be sacrificed.

2. Monitoring and Maximisation of Response

An FPC based system, besides helping the practices with no time or resources to run their own system, has the advantage of providing a facility for monitoring screening activity within the population as a whole, and relate it to laboratory details including smear and biopsy results. Exeter Family Practitioner Services Unit is currently developing a statistical package which will facilitate such monitoring (Head A, personal communication). This requires close collaboration between FPC and District Health Authority to facilitate collection of appropriate data, and many districts have named a Community Physician as the person responsible for screening. This person has overall responsibility for implementation and monitoring of programmes. The FPC's computerised register will provide a monitoring tool in the form of the Exeter programme and, in collaboration with Health Authorities, the FPC will be in a position to advise practices of the effectiveness of their programmes in comparison with other practices in the area.

An FPC based recall and call system would be available for practices not providing a register based system, using Health Authority Clinic appointments as their cue to action where practices do not screen their patients themselves. Cue to action would be more difficult to provide through the FPC. Whilst FPCs are probably willing to include Health Education literature with the invitations sent to unscreened women, and this aspect is likely to be acceptable to G.P.s, there would be problems with offering specific venues and appointments for screening, and G.P.s are likely to object if clinic appointments are given unless they have stated specifically that they are not offering screening themselves.

G.P.s using either a manual or computerised system based on their age-sex register could boost this database with demographic information including marital status, parity, smoking and occupational information, and would initiate the call and recall of women on their list, and provide a cue to action in the form of an appointment and health education literature providing information for unscreened women, and possibly also for screened women, some of whom, it is shown, have not realised they have been screened.

Hobbs et al (1985) suggest that a personal invitation including venue and provisional appointment, is the most effective method of ensuring optimal attendance. They present a model showing a continuum of women, from those who take the initiative themselves to those who will refuse, whatever the circumstances. In the middle are the large number of potential users of the system whose attendance can be maximised by the methods discussed.

The Survey of Unscreened Women highlighted the characteristics of women who have never responded to call in 4 enthusiastic practices with high population coverage. This group included high risk women for whom every effort needs to be made to maximise attendance, and low risk women who can probably safely be allowed to miss out on screening; further analysis of the data would clarify the size of these groups. Additionally, the survey has highlighted areas which would allow response to call to be maximised, particularly in provison of information and attention to factors responsible for embarrassment and fear, and in this area also further work would be valuable to clarify these areas.

Conclusion

A succession of guidelines has been produced for screening ages and frequency in this country. Whilst many have questioned the validity of these guidelines, the objective of a national screening programme must be the implementation of these guidelines in an effective and efficient manner, and to this end it would be helpful if the various bodies recommending age and frequency of screening would now remain consistent in their recommendations to allow successful implementation.

Modelling (Knox, 1976; Parkin, 1985) has been seen to demonstrate and confirm that it is coverage of a large proportion of the population, and not frequency of screening, which can be expected to achieve a reduction in the incidence of cervical cancer.

Implementation requires two approaches - a recall system to ensure that women already screened re-attend at appropriate intervals, and a call system for the unscreened. Whilst computer systems can be expected to produce names and addresses of those due for invitation, and non-responders, the more complex aspect of actually getting the message across to a woman that she should attend for a cervical smear taken needs addressing.

The findings of this study demonstrate the importance of one person being responsible overall for the implementation and monitoring of the programme including co-ordination of health education and service issues raised in this discussion. Monitoring is best carried out through the FPC computer programme, and the Community Physician is the person best placed to evaluate the findings and advise on programme development within a community.

Running of programmes in individual practices can safely, indeed more effectively be left to individual practitioners where those practitioners possess the enthusiasm and appropriate tools (especially an age-sex register) to enable them to do so. Follow-up of non-responders is an essential element of this, particularly those in the high risk category.

Collaboration of GPs and FPCs with Health Authorities is valuable in the overall monitoring of the programme and provision of Health Education material directed at specific high risk groups.

The aims and objectives of the study have been met to the extent that a comprehensive evaluation of the population coverage achieved by the differing levels of practice organisation, recall and call systems has been carried out. The FPC recall system was in its infancy at the time of evaluation, but indicators of measures which would increase its efficiency have emerged. Detailed examination of the older unscreened population has been carried out, this being the most important group both in terms of proportion with no screening record, and the prevalence of disease. Examination of younger women would have entailed an extension of the evaluation, and the information obtained would have been less likely to have a significant impact in terms of increase in population coverage by screening programmes.

RECOMMENDATIONS

Recommendations for the Department of Health and Social Security (DHSS)

1. The DHSS should keep to the present screening policy allowing its implementation and evaluation of its effectiveness.

2. The Exeter FPS computer programme should be implemented in all FPCs throughout the country.

3. The statistical programme being developed in Exeter should be provided to all FPCs to facilitate monitoring of the screening programme.

4. FPCs should be linked to allow electronic exchange of information when patients move from one part of the country to another.

5. Implementation of the Arthur Andersen recommendations for a Community Index would enhance the validity of the FPC registration data.

Recommendations for Family Practitioner Committees (FPCs)

1. FPCs should enter all available screening data, if possible providing a 5 year cumulative record (data

prior to 1982 is incomplete), collaborating with Health Authorities who will provide this data.

2. FPCs should use the Exeter FPS software to run a recall and call system for all participating practices, i.e. all practices other than those which the FPC is satisfied are running adequate practice centred programmes.

3. FPCs should use the same software to follow-up non responders.

4. FPCs should collaborate with Health Authorities to develop Health Education programmes aimed at high risk women not otherwise responding to call/recall.

5. FPCs should provide an analysis of the data held on their computerised register systems to facilitate inter-District and inter-Practice monitoring of screening coverage.

6. FPCs should ensure regular updating of their register, including new registrations, removals, address data and cytology data, by close collaboration with Practitioners and Health Authorities.

7. FPCs should ensure their information is Post Coded to

provide an alternative mode of analysis of screening data in relation to area of residence and census variables. + targetting of resources

Recommendations for Health Authorities

1. Health Authorities should provide a named person to be responsible for implementation and monitoring of the screening programme.

2. Health Authorities should collaborate closely with Family Practitioner Committees to ensure all available screening data, including those with abnormal results, are provided for entering to the FPC registration system.

3. Health Authorities should collaborate closely with General Practitioners to assist in providing screening facilities which will complement practice provision.

4. Health Authorities should ensure clinic provision takes into account deficiencies and anomalies which may have resulted in patients experiencing fear and embarrassment whilst attending for screening.

5. Health Authorities should facilitate a booking system which would provide readily available appointments

either through the FPC or GPs surgeries for patients not attending for screening by GPs.

6. Health Authorities should develop Health Education material to provide women with the necessary information relating to the screening process, the meaning of abnormal results, and the availability and effectiveness of treatment for pre-malignant conditions, thus increasing understanding, reducing fear, and providing a cue to action.

7. Health Authorities should collaborate with industry, exploring ways of providing Health Education within that setting both for women and for men to take home to their wives.

8. Health Authorities should undertake detailed monitoring and evaluation of screening programmes within their district, providing feedback to the agencies involved as appropriate.

Recommendations for General Practitioners

1. General Practitioners should establish an agreed policy for screening ages and frequencies within their practice.

2. General Practitioners should develop their own

register system for identification of patients due for call and recall, linking in socio-economic data, especially marital status, parity, occupation, smoking information to enable them to establish the risk category of non responders.

3. General Practitioners should use the data available under recommendation 2 to target high risk non responders.

4. General Practitioners without a suitable register system should make full use of the FPC call and recall system, and particularly should validate the FPC data in terms of patients' address, and the appropriateness of the call/recall for that patient.

5. General Practitioners should provide facilities for cervical cytology within their practice, ensuring that any deficiencies or anomalies which may have resulted in patients experiencing fear or embarrassment have been taken into account.

6. Where a General Practitioner does not provide cervical cytology on his/her premises, he/she should ensure that patients are aware of the nearest clinic provision.

7. General Practitioners should make full use of Health

Education material provided by the Health Authority, particularly for high risk women.

8. General Practitioners should be fully aware of the needs of socially deprived areas, and take appropriate measures to maximise response within those areas.

9. General Practitioners should be responsible for ensuring that non responders are followed-up, paying particular attention to high risk women. Personal letter or telephone approach have proved appropriate.

10. General Practitioners should collaborate with Health Authorities and FPCs in the monitoring and evaluation of the screening programme, and where there are inequalities between practices, should assist in the investigation and minimisation of these inequalities.

<u>Recommendations for Further Investigative Studies</u>

1. This study was unable to provide information on the frequency of screening for women screened. Future analysis of FPC data should include an analysis of length of time since previous smear, by GP and age group, of women screened.

2. Further analysis of the data obtained for this study

would investigate any relationship between source of smear (i.e. proportion screened by GP) and proportion with no record of screening.

3. A cluster analysis performed on the data obtained in the survey of unscreened women would clarify the size and characteristics of particular risk groups within the population of unscreened women.

4. Further work with both screened and unscreened women would be valuable in clarifying the factors responsible for embarrassment or fear within the process and outcome of screening.

5. Further work with unscreened women would be valuable in determining the content, presentation and mode of distribution of health education material needed to maximise response to call for screening.

6. An evaluation of the implementation of health education should be undertaken.

7. An evaluation of response to call and recall using the FPC register should be undertaken, with particular reference to the study of measures implemented to maximise response.

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APPENDIX A

No.

NORTH DERBYSHIRE HEALTH AUTHORITY

Family Planning and Cervical Cytology Services

Questionnaire to General Practices in North Derbyshire

Please answer as many of the following questions as possible and add any further comments at the end. In case of queries please contact Dr C Hopton, Department of Community Medicine, District Headquarters, Scarsdale Hospital, Newbold Road, Chesterfield (tel: Chesterfield 31255 Ext. 341)

Practice Characteristics

1. Please indicate number of doctors in the practice:
   - 1.
   - 2.
   - 3.
   - 4.
   - 4+

2. Please indicate number of doctors in the practice with formal family planning training:
   - 0.
   - 1.
   - 2.
   - 3.
   - 3+.

Family Planning Services Provided

3. Please indicate which contraceptive methods the practice will prescribe:
   - barrier methods
   - oral contraceptives
   - intra-uterine device

4. If the practice provides no family planning services or advice only on oral contraceptives - where are women referred who require other methods:
   - Health Authority Clinic
   - Other general practice
   - hospital

5. Does the practice have a family planning trained nurse to advise/teach patients about methods of contraception:
   - Yes
   - No

   If Yes, is this nurse:
   - own practice nurse
   - attached health visitor
   - attached community nurse
   - attached community midwife

6. Please indicate practice experience on the availability of the following services in North Derbyshire District:

	Adequate Services	
	Yes	No
Male sterilization:		
Female sterilization:		
Psychosexual counselling:		

7. Please add any comments below to expand on questions 1 - 6 or any other aspects of family planning services.

Cervical Cytology

8. What is the practice policy in relation to cervical cytology for the following groups of women:

   (a) Aged under 35 years

   (b) Aged over 35 years

9. Does the practice have own arrangements for cytology

Recall system	yes	no
Initial call system	yes	no

If NO would the practice wish to see facilities on the FPC computer developed further to allow for a call system to women over 35 years with no record of a cervical smear:

yes no

10. To which laboratory are cytology smears for your practice sent:

Chesterfield
Sheffield
Mansfield
Worksop
Derby
Christie (Manchester)
Stepping Hill
Other

11. If a patient has had treatment for pre-invasive lesions (ie cone biopsy,diathermy, laser treatment) are follow-up smears undertaken by the practice routinely: yes no

If YES state policy on frequency

If NO would you prefer (i) to undertake follow-up within the practice

(ii) follow-up by the hospital gynaecology department

Summary

12. Would the practice participate in a survey of women using general practice family planning services?
(This would involve giving questionnaires to women attending the practice for family planning consultations in a 'sample' week).

yes no

CH/LB
08.5.84.

APPENDIX B

NORTH DERBYSHIRE HEALTH AUTHORITY

FAMILY PLANNING CLINICS

Premises	Days	Times
Health Centre Bath Road Buxton	Tuesday 1st + 3rd Thursday	6.45-8.15 pm 1.45-3.15 pm
Health Centre Creswell Road Clowne	2nd + 4th Tuesday	6.00-8.00 pm
Health Centre High Street Dronfield	Wednesday 1st Tuesday	6.00-8.00 pm 6.00-8.00 pm
Health Centre Saltergate Chesterfield	Tuesday Wednesday 1st, 3rd + 5th Thurs. each Thursday	6.00-8.30 pm 2.00-4.30 pm and 6.00-8.30 pm 9.30 am-12 noon 2.00-4.30 pm and 6.00-8.30 pm
Health Centre Main Street Shirebrook	Monday 1st, 3rd + 5th Wed.	6.00-8.30 pm 6.00-8.30 pm
Health Clinic Eccles Close Hope	2nd + 4th Tuesday	6.15-8.30 pm
Health Clinic Lime Grove Walk Matlock	Monday 2nd + 4th Thursday	6.00-8.30 pm 9.00 am-12 noon
Health Clinic Hyde Bank Road New Mills	2nd, 3rd + 4th Wed.	7.00-10.00 pm
Health Clinic Lime Avenue Staveley	2nd + 4th Saturday	10.00 am-12.30 pm
Scarsdale Hospital Chesterfield	Wednesday	10.00 am-12.00 noon

PMcD7SJM
29.3.85

NORTH DERBYSHIRE HEALTH AUTHORITY

CYTOLOGY CLINICS

Premises	Days	Times
Health Centre High Street Dronfield	Once per month (Wed.)	1.45-3.20 pm
Health Centre Saltergate Chesterfield	2nd Tuesday	2.00-4.00 pm
Health Centre Main Street Shirebrook	1st Monday	9.15-10.30 am
Health Clinic High Street Clay Cross	1st Friday	9.00-11.00 am
Health Clinic Eccles Close Hope	Once per month (Tues.)	1.30-4.30 pm

PMcD/SJM
29.3.85

APPENDIX C

NORTH DERBYSHIRE HEALTH AUTHORITY

CERVICAL CYTOLOGY STUDY

Name of Practice:

Source of smears returned to the practice during the period 1 September to 30 September inclusive

Smear No	Laboratory processing smear						
	C`field	S`field	M`field	Worksop	N`ham	Derby	Other (state)

APPENDIX D

NORTH DERBYSHIRE HEALTH AUTHORITY

CYTOLOGY RECALL AND CALL PROCEDURES

Questionnaire to General Practitioners in North Derbyshire

Please tick one box only in each category (except Questions 1, 11, 12, 13 and 15).

Office use only

1. How many doctors are there in your practice? — 1. P A T

   Specify - Principals - FACTOR F {1 = 1-3 PRINCIPALS, 2 = 4-6 PRINCIPALS}
   Assistants -
   Trainees - FACTOR G {1 = 0 TRAINEES, 2 = 1 TRAINEE}

2. What is the total practice list size? — 2.

   A. Less than 3000 ☐ } 1 FACTOR H
   B. 3000 but less than 6000 ☐ } 1
   C. 6000 but less than 9000 ☐ } 2
   D. 9000 but less than 12000 ☐ } 2
   E. 12000 or more ☐ } 2

3. Is there a common practice policy for dealing with recalls/calls for cervical cytology? — 3.

   A. Yes ☐
   B. No ☐

   If No please would you fill in this form yourself and on receipt we will forward copies to your partners.

Recall Procedure

4. Who is responsible for running the recall system in your practice? — 4.

   A. Practice manager ☐
   B. Receptionist ☐
   C. Practice nurse ☐
   D. Health Visitor ☐
   E. General Practitioner ☐
   F. No formal procedure ☐

5. When you receive the list from the Family Practitioner Committee do you- | 5.

A. Return it unaltered? ← NONE IN THIS CATEGORY
B. Check with records? 1
C. Ignore it?
D. Use it as a basis for a practice generated recall
E. Do not receive a list

$\left.\begin{array}{l}\text{C}\\\text{D}\\\text{E}\end{array}\right\}2$ FACTOR I

If you have a practice based recall system:-

6. What age groups do you include? | 6.

FACTOR J

A. Under 35 only
B. 35 and over
C. 35 and over + under 35 with 3+ pregnancies
D. All ages
F. Other (specify)

$\left.\begin{array}{l}\text{A}\\\text{B}\\\text{C}\\\text{D}\\\text{F}\end{array}\right\}1$

NO REPLY 2
⇒ NO PRACTICE BASED RECALL SYSTEM

7. Do you cease at age 65? | 7.

A. For all women
B. If there are 2 consecutive negative smears
C. No
D. No policy

8. At what frequency do you recall routinely? | 8.

A. Less than 3 yearly 1
B. 3 yearly
C. 5 yearly
D. Other (specify)

$\left.\begin{array}{l}\text{B}\\\text{C}\\\text{D}\end{array}\right\}2$ FACTOR A

Call procedures

9. Do you have a call system? | 9.

A. Yes 1
B. No 2

FACTOR B

10. Do you have a system for targetting high-risk groups? 10.

A. Yes
B. No

11. If yes are these- 11.

A. Age-based?
B. Other?

Please give details and indicate response in each category.

12. If you are calling women under 35 is this- 12.

A. Linked to Family Planning/Maternity?
B. Routine at a specified age?
C. Consultation linked?
D. Other (specify)?

(please tick all categories which apply)

General

13. How are your recalls/calls initiated (other than FPC recall list)? 13.

FACTOR C

A. Age-sex register using cards } 1
B. Age-sex register using FPC list
C. Age-sex register using computer ← NO REPLIES
D. Manual search of records } 2
E. Consultation based
F. Smear file/book
G. Not applicable

14. If you use an age-sex register do you check against records before sending for a woman? 14.

A. Yes
B. No

15. How are your women invited to attend? FACTOR D | 15.

A. By FPC letter ☐ 1
B. By Practice generated letter ☐
C. By doctors personal interview ☐ 2
D. Other (specify) ☐

16. Do you keep a record of women invited for recall so that you know if they do not attend? | 16.

A. Yes ☐ 1 FACTOR E
B. No ☐ 2

17. If a woman does not attend do you- FACTOR K | 17.

A. Send another letter ☐ 1
B. Telephone her ☐
C. Send HV/Nurse to visit ☐
D. Visit yourself ☐ 2
E. Do nothing ☐
F. Wait for next consultation ☐

18. Is the 1st smear repeated 1 year later as a check against false negatives? | 18.

A. Yes ☐
B. No ☐

19. If a smear is reported <u>normal</u> is the woman informed? | 19.

A. By letter ☐
B. By telephone - patient initiated ☐
C. By telephone - doctor initiated ☐
D. At next consultation ☐
E. Other (specify) ☐
F. Not informed ☐

THE INFORMATION ON NUMBER OF FEMALE DOCTORS PER PRACTICE WAS OBTAINED FROM THE FPC COMPUTER

FACTOR L 1 = 0 FEMALE DOCTORS
2 = 1 or 2 FEMALE DOCTORS.

Abnormal smears

If a smear is reported abnormal or inadequate, and/or the laboratory recommend a repeat, please state your routine.

20. How is the woman informed a repeat is necessary? 20.

- A. By letter [ ]
- B. By telephone - patient initiated [ ]
- C. By telephone - doctor initiated [ ]
- D. By visit from HV/nurse [ ]
- E. By visit from GP [ ]
- F. At next consultation [ ]
- G. Not informed [ ]

21. When is the woman informed of the reason for needing a repeat smear? 21.

- A. In the letter/telephone conversation [ ]
- B. At the next consultation [ ]
- C. At the time the repeat smear is taken [ ]
- D. At home visit by HV/Nurse/GP [ ]
- E. Not informed [ ]

22. How do you ensure she attends at the recommended interval? 22.

- A. Included in usual recall arrangements [ ]
- B. Records marked [ ]
- C. Special record [ ]
- D. Other (specify) [ ]

Any further comments?

AP/SJM/23.10.84

Ashover	AA
Barlow & Holmesfield	AB
Brampton & Walton	AC
Clay Cross North	AD
Clay Cross South	AE
Coal Aston	AF
Dronfield North	AG
Dronfield South	AH
Dronfield Woodhouse	AJ
Eckington North	AK
Eckington South	AL
Gosforth Valley	AM
Hasland	AN
Holmewood & Heath	AP
Killamarsh East	AQ
Killamarsh West	AR
Morton	AS
North Wingfield Central	AT
Pilsley	AU
Renishaw	AW
Ridgeway & Marsh Lane	AX
Shirland	AY
Sutton	AZ
Tupton	BA
Unstone	BB
Wingerworth	BC

CHESTERFIELD - FN

Barrowhill & Hollingwood	AA
Brimington North	AB
Brimington South	AC
Brockwell	AD
Dunston	AE
Hasland	AF
Holmebrook	AG
Inkersall	AH
Lowgates & Woodthorpe	AJ
Markham	AK
Middlecroft	AL
Moor	AM
Newbold	AN
New Whittington	AP
Old Whittington	AQ
Rother	AR
St. Helen's	AS
St. Leonards	AT
Walton	AU
West	AW

BOLSOVER - FM

Ault Hucknall	AA
Barlborough	AB
Blackwell	AC
Bolsover Central	AD
Bolsover North	AE
Bolsover South	AF
Bolsover West	AG
Clowne	AH
Elmton-with-Creswell	AJ
Glapwell	AK
Pinxton	AL
Pleasley	AM
Scarcliffe East	AN
Scarcliffe North	AP
Scarcliffe South	AQ
Shirebrook East	AR
Shirebrook North	AS
Shirebrook North-West	AT
Shirebrook South	AU
Shirebrook South-West	AW
South Normanton East	AX
South Normanton West	AY
Tibshelf	AZ
Whitwell	BA

AMBER VALLEY - FL

Aldercar	AA
Alfreton East	AB
Alfreton West	AC
Alport	AD
Belper East	AE
Belper North	AF
Belper South	AG
Codnor	AH
Crich	AJ
Denby & Horsley Woodhouse	AK
Duffield	AL
Heage & Ambergate	AM
Heanor & Loscoe	AN
Heanor East	AP
Heanor West	AQ
Holbrook & Horsley	AR
Kilburn	AS
Riddings	AT
Ripley	AU
Ripley & Marehay	AW
Shipley Park	AX
Somercotes	AY
South West Parishes	AZ
Swanwick	BA
Wingfield	BB

NORTH DERBYSHIRE HEALTH AUTHORITY

DISTRICT MEDICAL OFFICER
Dr. MARION GILLETT MB ChB.

DEPARTMENT OF COMMUNITY MEDICINE
DISTRICT HEADQUARTERS
SCARSDALE HOSPITAL
NEWBOLD ROAD
CHESTERFIELD S41 7PF
Telephone: Chesterfield (0246) 31255
Ext: 341

Please ask for: Dr A Palmer - Senior Registrar in Community Medicine
Your Ref.
Our Ref. AP/LB

10 April 1985

Dear Colleague

As you know, I am evaluating cervical cytology services in this District. As part of this I am obtaining information from the FPC computer. In Chesterfield area this information should be fairly accurate as we know all the smear dates since 1981 from the Royal Hospital laboratory will have been entered. One aspect of this study is to relate data on population coverage to census information; with respect to this I should be most grateful if you could indicate on the enclosed map in which areas the majority of your patients live. Please exclude areas in which you have only a few patients.

Thank you very much for your help.

Yours sincerely

Ann Palmer

APPENDIX F

Office use only

WOMEN'S HEALTH SURVEY

Please would you tick the box which applies to you, or reply in the space available.

1

1. Are you
   1 Single
   2 Married
   3 Widowed
   4 Divorced
   5 Separated
   6 Cohabiting

2

3

2. Do you go out to work ?

   Yes
   No

   If 'yes' what is your occupation? 4

   ____ 5

3. If you are married, or have been in the past - what is/was the occupation of your husband ? 6

   ____ 7

4. How old were you when you left school ? __________

   What type of school or college did you <u>last</u> attend full time ?

   1 elementary or secondary school
   2 university
   3 nursing school
   4 some other type of college
   5 other (specify)

   8

   How old were you when you left there or finished or stopped your course ? 9

   ____

Office use only

5. Is your home owned or rented ?

   1 owned/am buying
   rented/rent free

10

   If your home is rented, is this from

   2 Local authority or council
   3 Housing association
   4 Employer
   5 Relative
   6 Other

6. How many children have you given birth to (include stillbirths) ?

11

   How many miscarriages have you had ?

   How old were you when you were first pregnant?

12

   Were your children born

   1 At home
   2 In hospital
   3 Both home and hospital
   8 Not applicable

13

7. Have you ever attended a Family Planning Clinic or your own doctor for family planning advice ?

14

   1 Clinic
   2 Own doctor
   3 Not attended
   4 Don`t know

8. Over the last 12 months would you say your health has been

15

   1 Good
   2 Fairly good
   3 Not good

9. Have you been troubled by any long standing illness, disability or infirmity over a period of time ?

16

   1 Yes
   2 No

10. During the last 2 weeks ending yesterday, apart from visits to hospital, did you talk to your doctor for any reason, either in person or by telephone ? 17

1 Yes
2 No

11. During the last year (since September 1st 1984) have you been in hospital as an in-patient, overnight or longer ? 18

1 Yes
2 No

12. Have you ever smoked a cigarette, cigar or pipe ? 19

Yes
No

If `yes` do you smoke nowadays ?

Yes
No

How many cigarettes do you smoke a <u>day</u>?

____

13. Do you ever drink alcohol, including drinks you brew at home ? 20

Yes
No

If `no` - very occasionally ?
never ?

If `yes` - would you say you

hardly drink at all
drink a little
drink a moderate amount
drink quite a lot
drink heavily
don`t know

Office use onl

14. People have different views about the effects of smoking and drinking on health

Do you think drinking can damage people`s health ? 21

1 Yes
2 Yes if in excess and no not in moderation
3 No
4 Don`t know

Do you think smoking can damage people`s health ? 22

1 Yes
2 Yes if in excess and no not in moderation
3 No
4 Don`t know

15. In your opinion should people be encouraged to eat such foods as brown bread, cereals, more fruit and vegetables and less animal fat ? 23

Yes
Some of these
No
Don`t know

16. If a woman found she had cancer of the cervix (neck of the womb) would it make any difference whether she started treatment immediately or waited 6 months to a year ? 24

Yes, she can be cured
Yes, she may have a better chance of cure
No, the cancer will not change in that time
No, she is going to die anyway
Don`t know

17. What sort of woman do you think is more likely to get cancer of the cervix (neck of the womb) ? 25

____

____

18. If you were to get cancer of the cervix (neck of the womb) What symptoms/signs would you notice? 26

____

____

19. In your opinion would check-ups show that a woman has an early form of cancer of the cervix before she herself could notice that something is wrong ? 27

Yes
Sometimes
No
Don`t know

20. Do you think these check-ups would enable the woman to be given treatment at a stage when the disease can be cured ? 28

Yes
Sometimes
No
Don`t know

21. Have you heard or read anything to suggest that you yourself should go for a cervical smear test (Pap test/Cytotest) ? 29

Yes
No
Don`t know

22. Have you yourself ever had a cervical smear test (Pap test/Cytotest) ? 30

Yes
No
Don`t know
I have had a hysterectomy
(the`major`/womb removed)

23. In your own case, do you think it is likely that you might get cancer of the cervix (neck of the womb) ? 31

No, not at all
Possible but unlikely
Quite likely
Very likely
Don`t know

24. In your opinion, why is it that some women don`t want to go for a cervical smear test (Pap test/Cytotest) ? 32

____

____

APPENDIX G

Dear

Womens Health Survey

I enclose a questionnaire which is being sent to women in several local practices, to enable us to find out more about factors which influence the use of health services by women, and whether these differ with Social Circumstances.

I should be most grateful if you would answer the questions and return the form to me as soon as possible. Thank you very much for your help.

Yours sincerely

APPENDIX H

Coding Sheet

Variable No	Name		Coding
1	Group -	Unscreened	1
		Screened	2
2	Age Group	45-49	1
		50-54	2
		55-59	3
3	Marital status	single	1
		married	2
		widowed	3
		divorced	4
		separated	5
		cohabitting	6
4	Occupation of woman	None/housewife	00
		occupation codes	01-17
5	Social class by womans own employment	I	1
		II	2
		IIIN	3
		IIIM	4
		IV	5
		V	6
		N/A	8
		N/K	9
6	Occupation of husband	None	00
		occupation codes	01-17
		N/A	88
		N/K	99
7	Social class by husbands occupation	I	1
		II	2
		IIIN	3
		IIIM	4
		IV	5
		V	6
		N/A	8
		N/K	9
8	Last full time education	Elementary/sec school	1
		University	2
		Nursing school	3
		College (other)	4
		Other	5
		N/K	9

9	Age of leaving full time education	15 or less	1
		16-17	2
		18 +	3
		N/K	9
10	Housing type	Owner occupied	1
		LA/council rented	2
		Housing Asscn rented	3
		Employer rented	4
		Relative rented	5
		Other rented	6
		N/K	9
11	Pregnancies (total)	None	0
		One	1
		Two	2
		Three	3
		Four	4
		Five +	5
		N/K	9
12	Age at first pregnancy	15 or less	1
		16-19	2
		20-24	3
		25-29	4
		30 +	5
		N/A	8
		N/K	9
13	Place of births	At home	1
		In hospital	2
		Both home & hospital	3
		N/A	4
14	Family planning	Clinic	1
		Own doctor	2
		Not attended	3
		Don't know	4
		Clinic and own Doctor	5
15	General health	Good	1
		Fairly good	2
		Not good	3
		N/K	9
16	Disability	Yes	1
		No	2
		N/K	9
17	Contact with doctor	Yes	1
		No	2
		N/K	9
18	Hospital stay	Yes	1
		No	2
		N/K	9

19	Smoking	Never smoked	1
		Ex smoker	2
		Current smoker-not cigarettes	3
		Current smoker-< 10	4
		10-19	5
		20 +	6
		N/K	9
20	Drinking - self image	Abstain	1
		Hardly drink at all	2
		Drink a little	3
		Drink moderate amount	4
		Drink quite a lot	5
		Drink heavily	6
		N/K	9
21	Effect of drinking on health	Yes	1
		Yes in excess/No in moderation	2
		No	3
		Don't know	9
22	Effect of smoking on health	Yes	1
		Yes in excess/No in moderation	2
		No	3
		Don't know	9
23	Healthy eating	Yes	1
		Some of these	2
		No	3
		Don't know	9
24	Early treatment for cancer of cervix	Yes - can be cured	1
		Yes - better chance of cure	2
		No - no change in 6/12	3
		No - will die anyway	4
		Don't know	9
25	Sort of woman		
26	Own susceptibility	No not at all	1
		Possible but unlikely	2
		Quite likely	3
		Very likely	4
		Don't know	9
27	Discovery of Cervical Cancer in self		
28	Check ups leading to discovery	Yes	1
		Sometimes	2
		No	3
		Don't know	9

29	Check ups leading to cure	Yes	1
		Sometimes	2
		No	3
		Don`t Know	9
30	Cervical smear test	Yes	1
		No	2
		Hysterectomy	3
		Don`t know	9
31	Advice to have cervical test	Yes	1
		No	2
		Don`t know	9
32	Reason why some women don`t go for test		
33	General Practice	Mee	1
		Thurston	2
		Brewer	3
		Murray	4

Question 17 (Variable 25)

Any woman	-	01
Middle age/older woman	-	02
Married woman/sexually active	-	03
Sexually active at early age	-	04
Promiscuous/many partners	-	05
Parous/many pregnancies/had children	-	06
Family history	-	07
Poor socio-economic conditions	-	08
Smoking/drinking in excess	-	09
No regular check-up	-	10
Not using barrier methods of contraception	-	11
Don't know	-	12
Other	-	13

<u>Question 18</u> (Variable 26)

Discharge	-	1
Bleeding	-	2
Irritation	-	3
Pain	-	4
Malaise/weight loss/appetite loss	-	5
Other	-	6
Don't know	-	9

Question 24 (Variable 32)

Embarassment	-	01
Fear	-	02
Pain	-	03
Unpleasantness	-	04
Degrading	-	05
Working - no time	-	06
Difficulty due to family/transport problems	-	07
Neglect of own health	-	08
Peer group influence	-	09
Ignorance	-	10
Not sexually active	-	11
Complacency/laziness	-	12
Preference for a Lady Doctor	-	13
Other	-	14
Don't know	-	15

APPENDIX I

Dear

Womens Health Survey

I have not yet received the completed questionnaire which I sent you 3 weeks ago. I appreciate it may be difficult for you to find time to fill it in, but it would be very helpful if you could complete it as soon as possible. If you have any problems with it, or have not received the form, please do not hesitate to contact the surgery.

Thank you very much for your help.

Yours sincerely,

APPENDIX J

Table J.1

WOMENS HEALTH SURVEY

NON RESPONDERS

Study No:

Age Group:

Screen/Unscreened:

Marital Status:

Own occupation:

Husband's occupation:

Housing type:

Parity:

Healthy/Chronically ill?:

No. of months since last seen by GP:

Hospitalization during last year:

Smoker?:

Table J.2

Characteristics of non responders to the Women's Health Survey - Practice B

Characteristic		Screening History			
		Unscreened		Screened	
		No.	%	No.	%
Age -	45 - 49	9	27.3	0	0
	50 - 54	9	27.3	2	18.2
	55 - 59	15	45.5	9	81.8
Marital- status	Married	24	72.7	7	63.6
	Single	4	12.1	2	18.2
	Widow/Div	0	0	3	27.3
	Not known	5	15.2	1	9.1
Health -	Good	19	57.6	4	36.4
	Reasonable	4	12.1	3	27.3
	Chronically ill	1	3.0	1	9.1
	Not known	9	27.3	3	27.3
Months since last saw GP -	less than 3	9	27.3	4	36.4
	3 to 6	3	9.1	1	9.1
	6 - 12	4	12.1	2	18.2
	12 - 24	0	0	1	9.1
	more than 24	10	30.3	3	27.3
	not known	7	21.2	0	0
Hospitalisation within 12 months -	Yes	2	6.1	0	0
	No	26	78.8	11	100.0
	N/K	7	21.2	0	0
Total		33	100.0	11	100.0

APPENDIX K

Table K.1

Practice Size. 26 Study Practices.

Practice	Women on List aged 10 +	No. of Principals	Women per Principal
A	624	1	624
B	4894	4	1223
C	3886	4	971
D	4184	4	1046
E	123	1	123
F	864	1	864
G	6386	6	1064
H	4268	4	1067
I	1842	2	921
J	1551	1	1551
K	3989	4	997
L	1595	2	797
M	3369	5	674
N	3458	3	1153
O	5039	5	1008
P	106	1	106
Q	2906	3	969
R	3994	3	1331
S	4121	3	1374
T	3331	3	1110
U	3509	4	877
V	1175	1	1175
W	1119	1	1119
X	1472	1	1472
Y	5446	5	1089
Z	953	1	953
Total	75227	73	1030

Source: FPC Data

Table K.2

Study Population by Age . Women aged 10 and over.

Age Group	Number	Proportion (%)
10 - 14	5715	7.6
15 - 19	6309	8.4
20 - 24	5903	7.8
25 - 29	5597	7.4
30 - 34	5426	7.2
35 - 39	6165	8.2
40 - 44	5024	6.7
45 - 49	4738	6.3
50 - 54	4703	6.3
55 - 59	5298	7.0
60 - 64	5654	7.5
65 - 69	4225	5.6
70 - 74	4114	5.5
75 +	6339	8.4
Not known	17	0.02
Total	75227	100.0

Source: FPC data

Table K.3

Marital Status. Women aged 15 and over. Chesterfield Area covered by 26 Study Practices. 1981.

Age Group	Marital Status					
	Single, Widowed & Divorced		Married		Total	
	No.	%	No.	%	No.	%
15 - 19	6476	94.3	390	5.7	6866	100.0
20 - 24	2735	46.5	3147	53.5	5882	100.0
25 - 29	1048	19.3	4378	80.7	5426	100.0
30 - 34	755	12.0	5548	88.0	6303	100.0
35 - 39	681	12.0	5006	88.0	5687	100.0
40 - 44	568	11.4	4431	88.6	4999	100.0
45 - 49	616	12.6	4274	87.4	4890	100.0
50 - 54	865	15.9	4581	84.1	5446	100.0
55 - 59	1199	20.6	4627	79.4	5826	100.0
60 - 64	1452	27.5	3833	72.5	5285	100.0
65 +	8930	59.2	6165	40.8	15095	100.0
Total	25325		46380		71605	

Source: 1981 Census; Small Area Statistics.

Table K.4

Housing Tenure by Household - Area covered by 26 Chesterfield Practices - 1981

Housing Tenure	Households	
	No.	%
Owner occupied	32406	49.7
Council etc.	26056	39.9
Housing association	474	0.7
Rented with business	260	0.4
By virtue of employment	533	0.8
Other rented -		
unfurnished	4633	7.1
furnished	646	1.0
Non-permanent	224	0.3
All households	65232	100.0

Source: OPCS. Census, 1981

Table K.5

Amenities in Private Households - Area covered by 26 Chesterfield Practices - 1981

Amenity	Households	
	No.	%
Bath and inside WC -		
both exclusively	62812	96.3
one or both shared	289	0.4
Lack bath or inside WC	1205	1.8
Neither bath nor WC	926	1.4
Lack inside WC	2004	3.1
Share inside WC	157	0.2
Persons per room -		
more than 1.5	157	0.2
more than 1.0, less than 1.5	1403	2.2
No car	28976	44.4
Total	65232	100.0

Source: OPCS. Census, 1981

Table K.6

Economic Position - All residents in Private Households aged 16 and over - Area covered by 26 Chesterfield Practices

a) All Persons

Economic Position	Males		Females	
	No.	%	No.	%
Total economically active	50491	76.4	29301	42.2
Total economically inactive	15571	23.6	40070	57.8
All persons aged 16 +	66062	100.0	69371	100.0

b) All Economically Active Persons

Economic Position	Males		Females	
	No.	%	No.	%
Working full time	44642	88.4	15860	54.1
Working part time	738	1.5	11769	40.2
Seeking work	4604	9.1	1709	5.8
Temporarily sick	507	1.0	180	0.6
All economically active persons	50491	100.0	29301	100.0

Table K.6 contd.

c) All economically inactive persons

Economic position	Males		Females	
	No.	%	No.	%
Permanently sick	1877	12.1	947	2.4
Retired	11334	72.8	3297	8.2
Student	2118	13.6	2333	5.8
Other inactive	242	1.6	33493	83.6
All economically inactive	15571	100.0	40070	100.0

Source: OPCS. Census, 1981

Table K.7

Social Class Structure by Male and Female Employment - Area Covered by 26 Chesterfield Practices - 1981

Social Class	Males		Females	
	No.	%	No.	%
I	1870	4.1	90	0.3
II	7910	17.3	5580	20.4
III N	4010	8.8	9840	35.9
III M	20870	45.6	3030	11.1
IV	8380	18.3	5820	21.2
V	2430	5.3	2770	10.1
Armed Forces and inadequately described	320	0.7	280	1.0
All Social Classes	45790	100.0	27410	100.0

Source: OPCS. Census, 1981

Table K.8

Occupation of Males and Females (10% sample). Area covered by 26 Chesterfield Practices. 1981

Occupational Group		Males		Females	
Description	Order	No.	%	No.	%
Professional and related supporting management	01	1380	3.0	250	0.9
Professional and related in education, welfare and health	02	1830	4.0	3740	13.6
Literary, artistic and sports	03	180	0.4	100	0.4
Professional and related in science, engineering and technology	04	2210	4.8	150	0.5
Managerial	05	4610	10.1	1570	5.7
Clerical and related	06	2400	5.2	7320	26.7
Selling	07	1330	2.9	2830	10.3
Security and protective services	08	800	1.7	100	0.4
Catering, cleaning, hairdressing and other personal service	09	1050	2.3	5960	21.7

contd. over

Table K.8 contd.

Occupational Group		Males		Females	
Description	Order	No.	%	No.	%
Farming, fishing and related	10	560	1.2	50	0.2
Materials processing; making and repairing (excluding metal and electrical)	11	3490	7.6	2760	10.1
Processing, making, repairing and related (metal and electrical)	12	10330	22.6	390	1.4
Painting, repetitive assembling, product inspecting, packaging and related	13	1580	3.5	1240	4.5
Construction, mining and related not identified elsewhere	14	4850	10.6	40	0.1
Transport operating, materials moving and storing and related	15	6160	13.5	270	1.0
Miscellaneous	16	2870	6.3	360	1.3
Inadequately described and not stated	17	160	0.3	280	1.0
Total		45790	100.0	27410	100.0

Source: OPCS, Census 1981

APPENDIX L

Table L.1

Women Screened for Cervical Disease by Age Group - 26 Chesterfield Practices - 1982-3 and 1983-4

Age Group	Number of Women in Study Population (Mar. 1985)	Number of Women Screened		Proportion of Women at Risk Screened (%)		Proportion of Total Smears (%)	
		1982-3	1983-4	1982-3	1983-4	1982-3	1983-4
15 - 19	6307	687	1142	10.9	18.1	9.9	10.2
20 - 24	5903	1006	1589	17.0	26.9	14.5	14.2
25 - 29	5597	978	1558	17.5	27.8	14.1	13.9
30 - 34	5426	895	1346	16.5	24.8	12.9	12.0
35 - 39	6165	1113	1513	18.1	24.5	16.0	13.5
40 - 44	5024	637	1102	12.7	21.9	9.2	9.9
45 - 49	4738	560	908	11.8	19.2	8.1	8.1
50 - 54	4703	463	671	9.8	14.3	6.7	6.0
55 - 59	5298	304	661	5.7	12.5	4.4	5.9
60 - 64	5654	186	420	3.3	7.4	2.7	3.8
Total aged 15 - 64	54834	6829	10910	12.5	19.9	100.0	100.0

Source: Derbyshire FPC computer

Table L.2

Women aged 15-64 Screened for Cervical Disease by Practice and Year - 26 Chesterfield Practices - 1982-3 and 1983-4

Practice	Population at risk (Mar.85)	No Recall (1982-3)		Recall (1983-4)	
		No.	%	No.	%
A	481	84	17.5	135	28.1
B	3514	465	13.2	755	21.5
C	2854	481	16.9	587	20.6
D	2937	453	15.4	575	19.6
E	903	117	13.0	214	23.7
F	591	59	10.0	123	20.8
G	4739	581	12.3	910	19.2
H	3062	451	14.7	588	19.2
I	1301	108	8.3	201	15.4
J	1125	125	11.1	177	15.7
K	3016	379	12.6	576	19.1
L	1205	176	14.6	244	20.2
M	2457	255	10.4	352	14.3
N	2404	449	18.7	558	23.2
O	3739	540	14.4	1068	28.6
P	91	4	4.4	16	17.6
Q	2156	185	8.6	405	18.8
R	3017	275	9.1	453	15.0
S	2754	233	8.5	403	14.6
T	2540	335	13.2	495	19.5
U	2592	300	11.6	403	15.5
V	883	119	13.5	170	19.3
W	823	93	11.3	133	16.2
X	1110	138	12.4	157	14.1
Y	3895	359	9.2	618	15.9
Z	619	62	10.0	128	20.7
Total	54834	6829	12.5	10910	19.9

Source: Derbyshire FPC computer

Table L.3

Source of Smear by Practice - All Smears 1982-3 and 1983-4 - 26 Chesterfield Practices

Practice	No Recall (1982-3)					Recall (1983-4)				
	Number of smears	Source of Smear (%)				Number of smears	Source of Smear (%)			
		GP	Clinic	Hosp.	N/K		GP	Clinic	Hosp.	N/K
A	91	52.7	4.4	15.4	27.5	151	65.6	6.0	14.6	13.9
B	477	43.6	20.5	11.5	24.1	598	42.5	19.4	11.2	26.9
C	489	28.4	6.3	11.7	53.6	528	28.6	6.1	11.4	54.0
D	462	66.9	11.7	7.4	14.1	513	40.7	6.5	4.3	7.9
E	119	35.3	29.4	20.2	15.1	130	38.5	27.7	19.2	14.6
F	63	49.2	23.8	11.1	15.9	70	54.3	21.4	10.0	14.3
G	597	63.8	10.1	12.3	13.7	525	64.6	10.5	11.6	13.3
H	468	61.3	16.9	10.0	11.8	489	60.5	17.0	11.0	11.5
I	110	18.2	27.3	30.0	24.5	131	21.4	27.5	26.0	25.2
J	128	2.3	16.4	20.3	60.9	148	6.1	15.5	18.9	59.5
K	382	42.4	13.6	17.3	26.7	429	44.5	13.8	16.3	25.4
L	186	64.5	5.4	12.9	17.2	208	67.3	5.3	11.5	15.9
M	263	33.8	16.7	32.7	16.7	293	37.2	15.7	31.4	15.7
N	469	74.4	8.5	6.4	10.7	487	74.7	8.4	6.6	10.3
O	546	63.0	16.7	10.1	10.3	578	63.3	16.1	10.2	10.4
P	4	50.0	50.0	-	-	5	60.0	40.0	-	-
Q	190	43.2	19.5	22.1	15.3	214	46.3	18.2	20.1	15.4
R	278	47.8	21.9	15.1	15.1	322	48.8	23.6	14.0	13.7
S	235	13.6	51.1	17.0	17.9	270	14.8	52.2	15.2	17.4

contd. over

Table L.3 contd.

Practice	No Recall (1982-3)					Recall (1983-4)				
	Number of smears	Source of Smear (%)				Number of Smears	Source of Smear (%)			
		GP	Clinic	Hosp.	N/K		GP	Clinic	Hosp.	N/K
T	344	63.1	11.9	12.2	12.8	364	64.3	11.5	11.8	12.4
U	307	36.2	21.2	26.1	16.6	410	43.9	20.0	20.5	15.6
V	120	68.3	9.2	9.2	13.3	175	50.9	12.6	22.9	13.7
W	93	22.6	28.0	28.0	21.5	137	28.5	27.7	26.3	16.8
X	142	3.5	56.3	23.9	16.2	162	1.9	50.0	30.2	17.9
Y	370	61.9	15.4	12.4	10.3	701	73.6	4.3	14.1	8.0
Z	65	4.6	7.7	21.5	66.2	136	17.6	11.8	18.4	47.1
All Practices	6994	49.0	16.8	14.4	19.7	8174	51.0	15.7	14.4	18.9

Table L.4

Women with no Screening History by Practice - 26 Chesterfield Practices - August 1985

Practice	Age Group							
	20-34		35-49		50-64		20-64	
	No.	%	No.	%	No.	%	No.	%
A	48	28.1	22	17.9	54	41.2	124	29.2
B	335	29.8	275	27.5	573	56.6	1183	37.7
C	218	25.0	166	20.1	311	38.0	695	27.6
D	266	30.5	235	26.1	368	42.9	869	33.0
E	93	27.9	62	25.1	122	53.0	277	34.2
F	55	39.0	57	26.3	87	51.8	199	37.8
G	368	26.4	383	27.8	854	58.1	1605	37.8
H	296	30.9	270	29.6	498	61.0	1064	39.6
I	126	30.7	145	38.6	259	70.4	530	45.9
J	93	31.5	107	32.5	218	60.1	418	42.4
K	245	25.1	271	30.7	492	61.7	1008	37.9
L	89	24.1	76	22.4	142	39.7	307	28.8
M	281	35.9	266	38.2	483	69.3	1030	47.4
N	179	24.1	129	20.9	352	46.5	660	31.2
O	390	34.6	281	24.7	447	44.8	1118	34.3
P	15	46.9	7	43.8	18	42.9	40	50.0
Q	236	28.6	239	45.0	414	65.0	889	46.5
R	310	37.5	346	38.1	511	62.1	1227	46.2
S	310	37.0	358	44.0	642	73.5	1310	51.9
T	286	29.8	195	29.8	386	58.8	867	38.2
U	260	33.5	289	34.9	495	69.2	1044	45.0
V	108	30.0	86	24.8	117	59.1	311	41.9
W	73	30.0	91	33.5	134	61.5	298	40.7
X	111	35.7	144	41.7	205	64.9	460	47.3
Y	457	37.6	406	35.1	654	61.2	1517	44.1
Z	41	25.8	64	37.4	108	52.4	213	39.7

Table M

Women with No Record of Screening by Practice and Age - 26 Chesterfield Practices

Practice	No. of women Aged 20-64	Age Group						All Ages 20-64	
		20-34		35-44		45-64			
		No.	%	No.	%	No.	%	No.	%
A	425	48	28.1	18	20.2	55	35.2	124	29.2
B	3142	335	29.8	148	20.4	700	54.1	1183	37.7
C	2517	218	25.0	112	19.0	365	34.5	695	27.6
D	2633	266	30.5	165	24.4	438	40.4	869	33.0
E	810	93	27.9	37	22.7	147	46.8	277	34.2
F	526	55	39.0	31	21.7	113	46.7	199	37.8
G	4243	368	26.4	218	22.9	1019	53.7	1605	37.8
H	2688	296	30.9	178	27.8	590	54.2	1064	39.6
I	1154	126	30.7	83	34.2	321	64.1	530	45.9
J	987	93	31.5	64	41.5	261	55.8	418	42.4
K	2659	245	25.1	182	28.0	581	56.4	1008	37.9
L	1067	89	24.1	50	20.6	168	37.0	307	28.8
M	2175	281	35.9	163	34.2	586	64.0	1030	47.4

Table M contd.

Practice	No. of women Aged 20-64	Age Group						All Ages 20-64	
		20-34		35-44		45-64			
		No.	%	No.	%	No.	%	No.	%
N	2116	179	24.1	82	20.7	399	40.8	660	31.2
O	3261	390	34.6	166	21.1	562	41.7	1118	34.3
P	80	15	46.9	6	54.5	19	51.4	40	50.0
Q	1910	236	31.8	148	40.2	505	63.1	889	46.5
R	2653	310	27.3	225	35.5	692	58.0	1227	46.2
S	2525	310	37.0	219	38.6	781	69.7	1310	51.9
T	2271	286	31.8	125	26.7	456	54.2	867	38.2
U	2320	260	33.5	182	31.8	542	55.8	1044	45.0
V	743	108	38.0	53	28.3	150	55.1	311	41.9
W	733	73	30.0	59	32.6	166	53.7	298	40.7
X	972	111	35.7	103	39.8	246	64.4	460	47.3
Y	3442	457	37.6	258	30.9	802	57.7	1517	44.1
Z	536	41	25.8	38	32.5	134	51.5	213	39.7
Total	48508	5274	31.2	3107	27.8	10842	53.2	19223	39.6

APPENDIX N

Results of Questionnaire on Practice Organisation for Recall and Call

Prac-	No. of Princi- pals	No. of Trainees	Size of Practice	Use of FPC List	Age Groups Screened	Frequency of Recall
A	1	-	A	E	C	C
B	4	1	D	B	E	C
C	4	1	C	E	E	C
D	4	-	D	B	C	C
E	1	-	A	E	B	C
F	1	-	A	B	D	D
G	6	1	E	B	B	C
H	4	1	D	D	B	C
I	2	-	B	B	C	C
J	1	-	B	B	D	A
K	4	-	C	B	C	C
L	2	-	B	B	B	C
M	5	-	C	B	-	C
N	3	1	C	E	C	C
O	5	-	D	B	C	C
P	1	-	A	D	C	C
Q	3	-	C	B	-	-
R	3	-	D	D	D	C
S	3	-	C	D	-	B
T	3	1	C	B	D	C
U	4	-	C	D	D	B
V	1	-	A	B	C	B
W	1	-	A	B	-	C
X	1	-	B	B	-	C
Y	5	1	E	E	B	C
Z	1	-	A	B	-	B

Prac-tice	Call System	13 Use of Age-sex Register	15 Method of Invi-tation 1	2	16 Record of Recalls	17 Non Attenders 1	2	3
A	A	A	B	C	A	A	B	C
B	A	A	B	D	A	E	-	-
C	A	A	B	D	A	A	-	-
D	A	A	B	D	A	A	-	-
E	A	A	B	D	A	E	-	-
F	A	B	B	D	A	A	F	-
G	A	A	B	D	A	E	-	-
H	A	A	B	D	A	A	B	-
I	B	G	A	C	A	C	-	-
J	A	D	A	C	B	F	-	-
K	A	A	B	D	A	E	-	-
L	A	A	B	D	A	B	-	-
M	A	E	B	D	A	A	B	C
N	B	A	B	C	A	A	F	-
O	A	A	B	C	A	A	C	F
P	A	A	A	D	A	F	-	-
Q	B	G	B	D	A	A	-	-
R	B	D	B	C	B	F	-	-
S	-	E	B	C	A	C	F	-
T	A	A	B	D	A	A	B	C
U	A	A	B	D	A	B	C	-
V	B	B	B	C	A	B	D	F
W	B	G	D	-	-	-	-	-
X	B	E	C	D	B	C	-	-
Y	A	A	B	D	A	F	-	-
Z	B	G	C	D	B	C	-	-

APPENDIX O

Socio-Economic Characteristics of Population by Practice (1981 Census)

Practice	% In Council Housing	% With No Bath/ WC	% Men Econ. Active	% Empld Men So. Class IV & V	% Men Seeking Work	% Econ. Active Men Seeking Work
A	30.9	1.2	78.9	20.8	6.7	8.5
B	36.2	3.1	76.6	22.7	7.1	9.3
C	43.9	2.3	76.7	23.3	8.1	10.5
D	37.4	3.0	76.6	22.8	7.2	9.4
E	18.0	2.7	79.0	21.7	6.0	7.6
F	16.6	4.2	74.1	9.3	2.7	3.6
G	33.1	2.9	77.0	22.5	6.9	9.0
H	37.1	3.3	76.1	23.5	7.2	9.5
I	41.3	4.9	79.9	30.6	7.7	9.6
J	33.8	1.7	75.0	22.6	5.4	7.3
K	46.5	2.9	77.7	26.4	7.1	9.2
L	59.2	3.5	77.3	30.5	7.8	10.1
M	48.9	1.7	74.5	22.3	5.6	7.6
N	39.0	3.2	77.9	24.0	7.4	9.6
O	34.7	2.9	76.7	34.7	6.9	9.0
P	50.5	1.3	76.3	29.9	9.3	12.1
Q	54.6	1.6	76.3	26.7	7.6	9.9
R	29.8	1.6	78.0	20.4	6.7	8.6
S	50.3	4.0	78.4	30.2	7.7	9.8
T	37.3	3.4	76.8	24.0	7.2	9.4
U	37.9	3.0	77.1	23.6	7.1	9.2
V	33.7	1.6	74.4	20.8	5.2	7.0
W	23.2	1.3	75.3	20.0	5.0	6.6
X	50.1	4.2	76.2	24.0	8.4	11.0
Y	38.8	2.5	75.1	20.9	6.9	6.9
Z	33.5	1.6	74.4	20.8	5.2	7.0

Practice and Social Characteristics

Practice	% Med Occ Ord. 14 (mining etc.)	% Female Econ. Active	% Econ. Active Female Social Class IV & V	% Female Seeking Work	% Econ. Active Female Seeking Work
A	9.3	43.2	23.7	2.2	5.1
B	8.2	43.7	29.1	2.5	5.7
C	14.0	39.8	29.8	2.6	6.4
D	7.0	43.6	27.7	2.5	5.6
E	8.3	45.1	23.9	2.5	5.5
F	1.9	39.4	32.0	1.5	3.8
G	8.0	43.9	28.6	2.5	5.6
H	8.1	43.5	27.4	2.5	5.8
I	7.1	43.9	32.8	3.2	7.4
J	18.4	39.1	32.7	2.4	6.2
K	10.9	43.0	35.2	3.0	6.9
L	10.4	41.5	38.4	3.2	7.6
M	18.8	39.1	33.0	2.3	2.3
N	7.7	45.5	31.3	2.7	6.0
O	8.0	43.4	43.7	2.4	5.6
P	14.5	39.5	34.6	2.7	6.8
Q	14.5	39.8	30.4	2.5	6.2
R	9.6	42.4	21.4	2.5	6.0
S	9.3	44.2	34.4	2.9	6.5
T	8.2	43.7	29.6	2.6	5.9
U	8.5	43.5	29.6	2.6	6.0
V	16.0	39.3	34.1	2.3	5.9
W	7.2	41.1	36.8	2.4	5.8
X	16.3	39.1	32.0	2.2	5.7
Y	12.3	40.7	37.5	1.8	4.5
Z	16.3	39.4	33.8	2.2	5.6

APPENDIX P

Table P.1

Unscreened Women by Age Group - 4 Participating Practices - Women's Health Survey.
Number unscreened and unscreened as a Proportion of all women on list.

Age Group	Practice									
	B		C		H		N		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
45 - 49	127	46.2	54	22.6	92	33.8	47	21.4	320	31.8
50 - 54	133	42.8	74	31.1	114	46.9	73	32.4	394	38.7
55 - 59	171	53.8	106	35.1	166	64.6	100	40.5	543	48.3
Total	431	47.7	234	30.0	372	48:2	220	31.8	1257	39.9

Source: FPC data

Table P.2

Women Participating by Age and Practice - Women's Health Survey

Practice	Age Group	Screening History			
		Unscreened		Screened	
		No.	%	No.	%
B	45 - 49	17	16.2	8	9.6
	50 - 54	24	22.9	17	20.5
	55 - 59	64	61.0	58	69.9
	Total	105	100.0	83	100.0
C	45 - 49	-	-	6	12.2
	50 - 54	3	21.4	11	22.4
	55 - 59	11	78.6	32	65.3
	Total	14	100.0	49	100.0
H	45 - 49	16	22.5	20	22.7
	50 - 54	20	28.2	25	28.4
	55 - 59	35	49.3	43	48.9
	Total	71	100.0	88	100.0
N	45 - 49	12	21.4	15	18.3
	50 - 54	17	30.4	27	32.9
	55 - 59	27	48.2	40	48.8
	Total	56	100.0	82	100.0
All Practices	45 - 49	45	18.3	49	16.2
	50 - 54	64	26.0	80	26.5
	55 - 59	137	55.7	173	57.3
	Total	246	100.0	302	100.0

Table P.3

Screening History by Marital Status - All Practices - Women's Health Survey

Marital Status	Screening History				Significance (χ^2 test)
	Unscreened		Screened		
	No.	%	No.	%	
Single	34	13.8	9	3.0	$p < 0.001$
Married	169	68.7	236	78.1	$0.05 > p > 0.025$
Widowed	28	11.4	31	10.3	n.s.
Divorced/Separated/ Cohabiting	14	5.7	26	8.6	n.s.
Not Known	1	0.4	-	-	-
Total	246	100.0	302	100.0	-

Table P.4

Screening History by Marital Status and Age - All Practices - Women's Health Survey

Age Group	Marital Status	Screening History				Significance (χ^2 test)
		Unscreened		Screened		
		No.	%	No.	%	
45 - 49	Single	6	13.3	1	2.0	$0.05 > p > 0.025$
	Married	35	77.8	44	89.8	n.s.
	Other	4	8.9	4	8.2	n.s.
	Total	45	100.0	49	100.0	-
50 - 54	Single	16	25.0	1	1.25	$p < 0.001$
	Married	40	62.5	65	81.25	$0.025 > p > 0.01$
	Other	8	12.5	14	17.5	n.s.
	Total	64	100.0	80	100.0	-
55 - 59	Single	12	8.8	7	4.0	$0.01 > p > 0.05$
	Married	94	68.6	127	73.4	n.s.
	Other	31	22.6	39	22.5	n.s.
	Total	137	100.0	173	100.0	-
All ages	Single	34	13.8	9	3.0	$p < 0.001$
	Married	169	68.7	236	78.1	$0.05 > p > 0.025$
	Other	43	17.5	57	18.9	n.s.
	Total	246	100.0	302	100.0	-

Table P.5

Screening History by Marital Status and Age - All Practices - Women's Health Survey

Screening History	Marital Status	Age Group						Significance (X^2 test)
		45 - 49		50 - 54		55 - 59		
		No.	%	No.	%	No.	%	
Unscreened	Single	6	13.3	16	25.0	12	8.8	$0.05 > p > 0.025$
	Married	35	77.8	40	62.5	94	68.6	n.s.
	Other	4	8.9	8	12.5	31	22.6	$0.05 > p > 0.025$
Screened	Single	1	2.0	1	1.25	7	4.0	n.s.
	Married	44	89.8	65	81.25	127	73.4	$0.05 > p > 0.025$
	Other	4	8.2	14	17.5	39	22.5	$0.1 > p > 0.05$

Table P.6

Screening History by Number of Pregnancies - All Practices - Women's Health Survey

Number of Pregnancies	Screening History				Significance (X^2 test)
	Unscreened		Screened		
	No.	%	No.	%	
None	65	26.4	34	11.3	$p < 0.001$
One	58	23.6	78	25.8	n.s.
Two	62	25.2	88	29.1	n.s.
Three or more	53	21.5	92	30.5	$0.025 > p > 0.05$
Not known	8	3.3	10	3.3	n.s.
Total	246	100.0	302	100.0	

Table P.7

Screening History by Number of Pregnancies - All Practices - Women's Health Survey

Number of Pregnancies	Screening History				Significance
	Unscreened		Screened		
	No.	%	No.	%	
None	65	26.4	34	11.3	$p < 0.001$
One	58	23.6	78	25.8	n.s.
Two	62	25.2	88	29.1	n.s.
Three	30	12.2	52	17.2	$0.01 > p > 0.05$
Four	16	6.5	24	7.9	n.s.
Five or more	7	2.8	16	5.3	n.s.
Not known	8	3.3	10	3.3	n.s.
Total	246	100.0	302	100.0	-

Table P.8

Screening History by Parity and Age - All Practices - Women's Health Survey

Age Group	Parity	Screening History				Significance (X^2 test)
		Unscreened		Screened		
		No.	%	No.	%	
45 - 49	Nullip	13	28.9	3	6.1	$0.005 > p > 0.001$
	Parous	31	68.8	46	93.9	$0.005 > p > 0.001$
	Not known	1	2.2	-	-	-
	Total	45	100.0	49	100.0	-
50 - 54	Nullip	24	37.5	9	11.25	$p < 0.001$
	Parous	37	57.8	68	85.0	$p < 0.001$
	Not known	3	4.7	3	3.75	-
	Total	64	100.0	80	100.0	-
55 - 59	Nullip	28	20.4	22	12.7	$0.05 > p > 0.025$
	Parous	105	76.6	144	83.2	n.s.
	Not known	4	2.9	7	4.0	-
	Total	137	100.0	173	100.0	-
All Ages	Nullip	65	26.4	34	11.3	$p < 0.001$
	Parous	173	70.3	258	85.4	$p < 0.001$
	Not known	8	3.3	10	3.3	-
	Total	246	100.0	302	100.0	-

Table P.9

Screening History by Parity and Marital Status - All Practices - Women's Health Survey

Marital Status	Parity	Screening History				Significance (χ^2 test)
		Unscreened		Screened		
		No.	%	No.	%	
Single	Nullip	28	82.4	8	88.9	n.s.
	Parous	1	2.9	-	-	-
	Not known	5	14.7	1	11.1	-
	Total	34	100.0	9	100.0	-
Married	Nullip	27	16.0	21	8.9	$0.05 > p > 0.025$
	Parous	142	84.0	212	89.8	$0.1 > p > 0.05$
	Not known	-	-	3	1.3	-
	Total	169	100.0	236	100.0	-
Widowed	Nullip	10	35.7	3	9.7	$0.025 > p > 0.001$
	Parous	18	64.3	28	90.3	$0.025 > p > 0.001$
	Total	28	100.0	31	100.0	-
Divorced/Sep/ Cohabiting	Nullip	-	-	2	7.7	-
	Parous	12	85.7	23	88.5	n.s.
	Not known	2	14.3	1	3.8	-
	Total	14	100.0	26	100.0	
Not known	Parous	1	100.0	-	-	-
	Total	1	100.0	-	-	-

Table P.10

Screening History by Age at First Pregnancy - All Practices - Women's Health Survey

Age at First Pregnancy	Screening History				Significance (χ^2 test)
	Unscreened		Screened		
	No.	%	No.	%	
16 - 19	23	9.3	31	10.3	n.s.
20 - 24	83	33.7	120	39.7	n.s.
25 - 29	44	17.9	73	24.2	$0.1 > p > 0.05$
30 +	21	8.5	41	13.6	$0.1 > p > 0.05$
Nulliparous	65	26.4	34	11.3	$p < 0.001$
Not known	10	4.1	3	1.0	-
Total	246	100.0	302	100.0	-

Table P.11

Screening History by Occupation of Woman - All Practices - Women's Health Survey

Occupational Group		Screening History				Significance
Description	Order	Unscreened		Screened		
		No.	%	No.	%	
Professional and related supporting management	01	-	-	2	0.7	-
Professional and related in education, welfare and health	02	15	6.1	14	4.6	n.s.
Literary, artistic and sports	03	-	-	1	0.3	-
Professional and related in science engineering and technology	04	4	1.6	1	0.3	-
Managerial	05	7	2.8	1	0.3	-
Clerical and related	06	16	6.5	38	12.6	$0.025 > p > 0.001$
Selling	07	12	4.9	9	3.0	n.s.
Security and protective services	08	-	-	2	0.7	-

contd. over

Table P11contd.

Occupational Group		Screening History				Significance (X^2 test)
Description	Order	Unscreened		Screened		
		No.	%	No.	%	
Catering, cleaning, hairdressing and other personal service	09	23	9.3	46	15.2	$0.05 > p > 0.025$
Farming, fishing and related	10	-	-	-	-	-
Materials processing; making and repairing (excluding metal and electrical)	11	5	2.0	6	2.0	n.s.
Processing, making, repairing and related (metal and electrical)	12	1	0.4	3	1.0	-
Painting, repetitive assembling, product inspecting, packaging and related	13	4	1.6	8	2.6	n.s.
Construction, mining and related not identified elsewhere	14	-	-	-	-	-
Transport operating, materials moving and storing and related	15	2	0.8	-	-	-

contd. over

Table P11contd.

Occupational Group		Screening History				Significance
Description	Order	Unscreened		Screened		(X^2 test)
		No.	%	No.	%	
Miscellaneous	16	8	3.3	2	0.7	$0.025 > p > 0.01$
None / Housewife		144	58.5	164	54.3	n.s.
Not known		5	2.0	5	1.7	-
Total		246	100.0	302	100.0	-

Table P.12

Screening History by Occupation of Husband - All Practices - Women's Health Survey

Occupational Group		Screening History				Significance (χ^2 test)
Description	Order	Unscreened		Screened		
		No.	%	No.	%	
Professional and related supporting management	01	4	1.6	6	2.0	n.s.
Professional and related in education, welfare and health	02	7	2.8	16	5.3	n.s.
Literary, artistic and sports	03	-	-	2	0.7	-
Professional and related in science, engineering and technology	04	5	2.0	13	4.3	n.s.
Managerial	05	18	7.3	23	7.6	n.s.
Clerical and related	06	11	4.5	22	7.3	n.s.
Selling	07	4	1.6	13	4.3	$0.1 > p > 0.05$
Security and protective services	08	1	0.4	3	1.0	-

contd. over

Table P12 contd

Occupational Group		Screening History				Significance
Description	Order	Unscreened		Screened		(X^2 test)
		No.	%	No.	%	
Catering, cleaning, hairdressing and other personal service	09	7	2.8	10	3.3	n.s.
Farming, fishing and related	10	2	0.8	2	0.7	-
Materials processing; making and repairing (excluding metal and electrical)	11	10	4.1	12	4.0	n.s.
Processing, making and repairing and related (metal and electrical)	12	50	20.3	54	17.9	n.s.
Painting, repetitive assembling, product inspecting, packaging and related	13	3	1.2	8	2.6	n.s.
Construction, mining and related not identified elsewhere	14	9	3.7	11	3.6	n.s.
Transport operating, materials moving and storing and related	15	14	5.7	38	12.6	$0.01 > p > 0.005$

contd. over

Table P12 contd.

Occupational Group		Screening History				Significance
Description	Order	Unscreened		Screened		(X^2 test)
		No.	%	No.	%	
Miscellaneous	16	30	12.2	37	12.3	n.s.
None		11	4.5	7	2.3	n.s.
Not Applicable		35	14.2	12	4.0	$p < 0.001$
Not known		25	10.2	13	4.3	$0.01 > p > 0.005$
Total		246	100.0	302	100.0	-

Table P.13

Screening History by Social Class based on the Woman's Occupation - All Practices - Women's Health Survey

Social Class	Screening History				Significance (X^2 test)
	Unscreened		Screened		
	No.	%	No.	%	
I	2	0.8	1	0.3	-
II	22	8.9	16	5.3	$0.1 > p > 0.05$
III N	29	11.8	48	15.9	n.s.
III M	5	2.0	10	3.3	n.s.
IV	18	7.3	37	12.3	$0.1 > p > 0.05$
V	21	8.5	22	7.3	n.s.
Not Applicable	144	58.5	164	54.3	n.s.
Not known	5	2.0	4	1.3	-
Total	246	100.0	302	100.0	-

Table P.14

Screening History by Marital Status and Social Class based on Husband's Occupation - All Practices - Women's Health Survey

Marital Status	Social Class	Screening History				Significance (X^2 test)
		Unscreened		Screened		
		No.	%	No.	%	
Single	Not Applicable	34	100.0	9	100.0	-
Married	I	3	1.8	11	4.7	$0.01 > p > 0.005$
	II	23	13.6	39	16.5	n.s.
	III N	15	8.9	27	11.4	n.s.
	III M	53	31.4	84	35.6	n.s.
	IV	38	22.5	52	22.0	n.s.
	V	15	8.9	9	3.8	$0.05 > p > 0.025$
	Not known	22	13.1	14	6.0	$0.025 > p > 0.01$
	Total	169	100.0	236	100.0	-

contd. over

Table P14 contd.

Marital Status	Social Class	Screening History				Significance (X^2 test)
		Unscreened		Screened		
		No.	%	No.	%	
Widowed	I	1	3.6	1	3.2	-
	II	1	3.6	1	3.2	-
	III N	4	14.3	6	19.4	n.s.
	III M	9	32.1	12	38.7	n.s.
	IV	5	17.9	9	29.0	n.s.
	V	0	-	0	-	-
	Not known	8	28.6	2	6.5	$0.025 > p > 0.01$
	Total	28	100.0	31	100.0	-
Divorced	I	0	-	0	-	-
	II	0	-	3	13.6	-
	III N	2	16.7	2	9.1	-
	III M	7	58.3	10	45.5	n.s.
	IV	0	-	4	18.2	-
	V	1	8.3	0	-	-
	Not known	2	16.7	3	13.6	-
	Total	12	100.0	22	100.0	-

contd. over

Table P14contd.

Marital Status	Social Class	Screening History				Significance (X^2 test)
		Unscreened		Screened		
		No.	%	No.	%	
Separated	I	0	-	1	100.0	-
	III M	1	100.0	0	-	-
	Total	1	100.0	1	100.0	-
Cohabiting	Not applicable	1	100.0	3	100.0	-
Not known	III N	1	100.0	0	-	-
	Total	1	100.0	0	-	-
Total	I	4	1.6	13	4.3	$0.1 > p > 0.05$
	II	24	9.8	43	14.2	n.s.
	III N	22	8.9	36	11.9	n.s.
	III M	71	28.9	108	35.8	$0.1 > p > 0.05$
	IV	43	17.5	65	21.5	n.s.
	V	16	6.5	9	3.0	$0.05 > p > 0.025$
	Not Applicable	35	14.2	12	4.0	$p < 0.001$
	Not Known	31	12.6	16	5.3	$0.005 > p > 0.001$
	Total	246	100.0	302	100.0	-

Table P.15

Screening History by Social Class based on Occupation of Husband of Ever Married Women - All Practices - Women's Health Survey

Social Class of Husband	Screening History				Significance (χ^2 test)
	Unscreened		Screened		
	No.	%	No.	%	
I	4	1.6	13	4.3	$0.1 > p > 0.05$
II	24	9.8	43	14.2	n.s.
III N	22	8.9	36	11.9	n.s.
III M	71	28.9	108	35.8	$0.1 > p > 0.05$
IV	43	17.5	65	21.5	n.s.
V	16	6.5	9	3.0	$0.05 > p > 0.025$
Not Applicable	35	14.2	12	4.0	$p < 0.001$
Not known	31	12.6	16	5.3	$0.005 > p > 0.001$
Total	246	100.0	302	100.0	-

Table P.16

Screening History by Housing Type - All Practices - Women's Health Survey

Housing Type	Screening History				Significance (χ^2 test)
	Unscreened		Screened		
	No.	%	No.	%	
Owner Occupied	152	61.8	195	64.6	n.s.
Local Authority or council	77	31.3	97	32.1	n.s.
Housing association	1	0.4	3	1.0	-
Rented	15	6.1	6	2.0	$p < 0.001$
Not known	1	0.4	1	0.3	-
Total	246	100.0	302	100.0	-

Table P.17

Screening History by Education - All Practices

- Women's Health Survey

Last Full Time Education	Screening History				Significance (X^2 test)
	Unscreened		Screened		
	No.	%	No.	%	
Elementary school / secondary school	200	81.3	234	77.5	n.s.
University	5	2.0	1	0.3	-
Nursing school	9	3.7	8	3.3	n.s.
Other type of college	20	8.1	36	11.9	n.s.
Other	6	2.4	18	6.0	$0.05 > p > 0.025$
Not known	6	2.4	5	1.7	n.s.
Total	246	100.0	302	100.0	-

TableP.18

Screening History by Education and Age - All Practices - Women's Health Survey

Age Group	Last Full Education	Screening History				Significance (X^2 test)
		Unscreened		Screened		
		No.	%	No.	%	
45 - 49	Elementary / secondary school	36	80.0	36	73.5	n.s.
	Other	9	20.0	13	26.5	n.s.
	Total	45	100.0	49	100.0	-
50 - 54	Elementary / secondary school	48	75.0	61	76.3	n.s.
	Other	14	21.9	18	22.5	n.s.
	Not known	2	3.1	1	1.2	-
	Total	64	100.0	80	100.0	-
55 - 59	Elementary / secondary school	116	84.7	137	79.2	n.s.
	Other	17	12.4	32	18.5	n.s.
	Not known	4	2.9	4	2.3	-
	Total	137	100.0	173	100.0	-
All Ages	Elementary / secondary school	200	81.3	234	77.5	n.s.
	Other	40	16.3	63	20.9	n.s.
	Not known	6	2.4	5	1.7	n.s.
	Total	246	100.0	302	100.0	-

Table P.19

Screening History by Age of Leaving Full Time Education - All Practices - Women's Health Survey

Age of Leaving Full Time Education	Screening History				Significance (X^2 test)
	Unscreened		Screened		
	No.	%	No.	%	
15 or less	191	77.6	222	73.5	n.s.
16 - 17	25	10.2	43	14.2	n.s.
18 +	29	11.8	35	11.6	n.s.
Not known	1	0.3	2	0.7	-
Total	246	100.0	302	100.0	-

Table P.20

Screening History by Age of Leaving Full Time Education and Age - All Practices - Women's Health Survey

Age Group	Age of Leaving Full Time Education	Screening History				Significance (X^2 test)
		Unscreened		Screened		
		No.	%	No.	%	
45 - 49	15 or less	34	75.6	30	61.2	n.s.
	16 - 17	4	8.9	12	24.5	$0.05 > p > 0.025$
	18 +	7	15.6	7	14.3	n.s.
	Not known	-	-	-	-	-
	Total	45	100.0	49	100.0	-
50 - 54	15 or less	40	62.5	57	71.3	n.s.
	16 - 17	11	17.2	8	10.0	n.s.
	18 +	12	18.7	13	16.3	n.s.
	Not known	1	1.7	2	2.5	-
	Total	64	100.0	80	100.0	-
55 - 59	15 or less	117	85.4	135	78.0	n.s.
	16 - 17	10	7.3	23	13.3	$0.1 > p > 0.05$
	18 +	10	7.3	15	8.7	n.s.
	Not known	-	-	-	-	-
	Total	137	100.0	173	100.0	-
All Ages	15 or less	191	77.6	222	73.5	n.s.
	16 - 17	25	10.2	43	14.2	n.s.
	18 +	29	11.8	35	11.6	n.s.
	Not known	1	0.3	2	0.7	-
	Total	246	100.0	302	100.0	-

Table P.21

Screening History by Place of Birth of Children - All Practices - Women's Health Survey

Place of Birth of Children	Screening History				Significance (X^2 test)
	Unscreened		Screened		
	No.	%	No.	%	
At Home	25	10.2	41	13.6	n.s.
In Hospital	85	34.6	120	39.7	n.s.
Home and Hospital	62	25.2	103	34.1	$0.025 > p > 0.01$
Not applicable	65	26.4	34	11.3	$p < 0.001$
Not known	9	3.7	4	1.3	$0.1 > p > 0.05$
Total	246	100.0	302	100.0	-

Table P.22

Screening History by Whether the Woman had a Hospital Experience at the time of giving Birth to her Children - All Practices - Women's Health Survey

Hospital Experience	Screening History				Significance (X^2 test)
	Unscreened		Screened		
	No.	%	No.	%	
Yes	147	59.8	223	73.8	$p < 0.001$
No	90	36.6	75	24.8	$0.005 > p > 0.001$
Not known	9	3.7	4	1.3	$0.1 > p > 0.05$
Total	246	100.0	302	100.0	-

Table P.23

Screening History by Self Reported Health Status - All Practices - Women's Health Survey

Health During Previous 12 Months	Screening History				Significance (X^2 test)
	Unscreened		Screened		
	No.	%	No.	%	
Good	107	43.5	114	37.7	n.s.
Fairly Good	110	44.7	145	48.0	n.s.
Not Good	28	11.4	42	13.9	n.s.
Not known	1	0.4	1	0.3	-
Total	246	100.0	302	100.0	-

Table P.24

Screening History and Disability (Self Reported) - All Practices - Women's Health Survey

Long Standing Illness or Disability	Screening History				Significance
	Unscreened		Screened		
	No.	%	No.	%	
Present	59	24.0	91	30.1	n.s.
Absent	183	74.4	205	67.9	$0.1 > p > 0.05$
Not known	4	1.6	6	2.0	n.s.
Total	246	100.0	302	100.0	-

Table P.25

Screening History by Hospitalisation during previous 18 months - All Practices - Women's Health Survey

Recent Hospitalisation	Screening History				Significance (X^2 test)
	Unscreened		Screened		
	No.	%	No.	%	
Yes	21	8.5	29	9.6	n.s.
No	223	90.7	272	90.1	n.s.
Not known	2	0.8	1	0.3	-
Total	246	100.0	302	100.0	-

Table P.26

Screening History by Recent Doctor Contact - All Practices - Women's Health Survey

Contact with Doctor during Previous 2 Weeks	Screening History				Significance (X^2 test)
	Unscreened		Screened		
	No.	%	No.	%	
Yes	27	11.0	44	14.6	n.s.
No	217	88.2	257	85.1	n.s.
Not known	2	0.8	1	0.3	-
Total	246	100.0	302	100.0	-

Table P.27

Screening History by Attendance for Family Planning Advice
- All Practices - Women's Health Survey

Place Attended for Family Planning Advice	Screening History				Significance (X^2 test)
	Unscreened		Screened		
	No.	%	No.	%	
Clinic	12	4.8	41	13.6	$p < 0.001$
General Practitioner	9	3.7	28	9.3	$0.01 > p > 0.005$
Clinic and General Practitioner	2	0.8	13	4.3	$0.025 > p > 0.01$
Not Attended	202	82.1	205	67.9	$p < 0.001$
Don't know	2	0.8	1	0.3	-
No reply	19	7.7	14	4.6	n.s.
Total	246	100.0	302	100.0	-
Ever Attended	23	9.3	82	27.2	$p < 0.001$

Table P.28

Screening History by Attendance for Family Planning Advice and Age - All Practices - Women's Health Survey

Age Group	Ever Attended for Family Planning Advice	Screening History				Significance (X^2 test)
		Unscreened		Screened		
		No.	%	No.	%	
45 - 49	Yes	8	17.8	25	51.0	$p < 0.001$
	No	37	82.2	22	44.9	$p < 0.001$
	Not known	0	-	2	4.1	n.s.
	Total	45	100.0	49	100.0	-
50 - 54	Yes	8	12.5	29	36.3	$0.005 > p > 0.001$
	No	47	73.4	47	58.7	$0.1 > p > 0.05$
	Not known	9	14.1	4	5.0	$0.1 > p > 0.05$
	Total	64	100.0	80	100.0	-
55 - 59	Yes	7	5.1	28	16.2	$0.005 > p > 0.001$
	No	118	86.1	136	78.6	$0.1 > p > 0.05$
	Not known	12	8.8	9	5.2	n.s.
	Total	137	100.0	173	100.0	-
All Ages	Yes	23	9.3	82	27.2	$p < 0.001$
	No	202	82.1	205	67.9	$p < 0.001$
	Not known	21	8.5	15	5.0	$0.1 > p > 0.05$
	Total	246	100.0	302	100.0	-

Table P.29

Screening History by Attitude to the Effects of Smoking - All Practices - Women's Health Survey

Smoking can Damage Health	Screening History				Significance (χ^2 test)
	Unscreened		Screened		
	No.	%	No.	%	
Yes	149	60.8	208	69.1	$0.05 > p > 0.025$
Yes in Excess / No in Moderation	91	37.1	85	28.2	$0.05 > p > 0.025$
No	3	1.2	4	1.3	-
Don't Know	2	0.8	4	1.3	-
Total	245	100.0	301	100.0	-

No replies - Unscreened - 1 (0.4%)
Screened - 1 (0.3%)

Table P.30

Screening History by Attitude to the Effects of Drinking Alcohol
All Practices - Women's Health Survey

Drinking can Damage Health	Screening History				Significance (X^2 test)
	Unscreened		Screened		
	No.	%	No.	%	
Yes	49	20.2	64	21.2	n.s.
Yes in excess/ No in Moderation	177	72.8	223	73.8	n.s.
No	5	2.1	6	2.0	n.s.
Don't know	12	4.9	9	3.0	n.s.
Total	243	100.0	302	100.0	-

No replies - Unscreened - 3 (1.2%)
Screened - 0

Table P.31

Screening History and Attitude to Healthy Eating - All Practices - Women's Health Survey

People should be Encouraged to eat Healthy Food	Screening History				Significance (X^2 test)
	Unscreened		Screened		
	No.	%	No.	%	
Yes	182	74.5	248	82.1	$0.05 > p > 0.025$
Some of these	50	20.6	48	15.9	n.s.
No	4	1.6	3	1.0	-
Don't know	7	2.9	3	1.0	n.s.
Total	243	100.0	302	100.0	-

No replies - Unscreened - 3 (1.2%)
Screened - 0

Table P.32

Screening History by Smoking Habits - All Practices - Women's Health Survey

Number of Cigarettes Smoked per Day	Screening History				Significance (X^2 test)
	Unscreened		Screened		
	No.	%	No.	%	
Never smoked	101	41.1	106	35.1	n.s.
Ex-smoker	71	28.9	101	33.4	n.s.
Current smoker					
less than 10	14	5.7	17	5.6	n.s.
10 - 19	41	16.7	43	14.2	n.s.
20 or more	16	6.5	34	11.3	$0.1 > p > 0.05$
Not known	3	1.2	1	0.3	-
Total	246	100.0	302	100.0	-
All Current Smokers	71	28.9	94	31.1	n.s.

Table P.33

Screening History by Drinking Habits - All Practices
- Women's Health Survey

Self Reported Amount Drunk	Screening History				Significance (X^2 test)
	Unscreened		Screened		
	No.	%	No.	%	
Abstain	47	19.2	37	12.3	$0.025 > p > 0.01$
Hardly at all / Very occassionally	102	41.5	126	41.7	n.s.
A little	66	26.9	97	32.1	n.s.
Moderate amount	27	11.0	39	12.9	n.s.
Quite a Lot	3	1.2	2	0.7	-
Don't know	0	-	1	0.3	-
Total	245	100.0	302	100.0	-

No replies - Unscreened - 1 (0.4)
Screened - 0

Table P.34

Screening History by Cue to Action and Knowledge of Screening - All Practices - Women's Health Survey

Heard or Read about Cervical Smear	Have you had a Smear ?	Screening History				Significance (X^2 test)
		Unscreened		Screened		
		No.	%	No.	%	
Yes	Yes	36	45.6	162	93.1	$p < 0.001$
	No	37	46.8	6	3.4	$p < 0.001$
	Hyst'omy	6	7.6	6	3.4	n.s.
	Total	79	100.0	174	100.0	-
No	Yes	23	16.5	82	73.9	$p < 0.001$
	No	104	74.8	14	12.6	$p < 0.001$
	Hyst'omy	12	8.6	15	13.5	n.s.
	Total	139	100.0	111	100.0	-
Don't know	Yes	2	15.4	5	50.0	-
	No	8	61.5	4	40.0	n.s.
	Hyst'omy	0	-	1	10.0	-
	Don't know	3	23.1	0	-	-
	Total	13	100.0	10	100.0	-
No reply	Yes	3	20.0	4	57.1	-
	No	4	26.7	2	28.6	-
	Hyst'omy	6	40.0	1	14.3	-
	No reply	2	13.3	0	-	-
	Total	15	100.0	7	100.0	-

Table P.35

Screening History by Knowledge of Screening - All Practices - Women's Health Survey

Have You ever had a Cervical Smear Test ?	Screening History			
	Unscreened		Screened	
	No.	%	No.	%
Yes	64	26.0	253	83.8
No	153	62.2	26	8.6
Hysterectomy	24	9.8	23	7.6
Don't know	3	1.2	0	-
No reply	2	0.8	0	-
Total	246	100.0	302	100.0

Table P.36

Screening History by Knowledge of Screening and Practice - Women's Health Survey

Practice	Have you had a Smear ?	Screening History			
		Unscreened		Screened	
		No.	%	No.	%
B	Yes	27	25.7	80	96.4
	No	72	68.6	2	2.4
	Hysterectomy	5	4.8	1	1.2
	Don't know	1	1.0	0	-
	Total	105	100.0	83	100.0
C	Yes	5	35.7	22	44.9
	No	8	57.1	23	46.9
	Hysterectomy	1	7.1	4	8.2
	Total	14	100.0	49	100.0
H	Yes	19	26.8	71	80.7
	No	33	46.5	1	1.1
	Hysterectomy	17	23.9	16	18.2
	Total	71	100.0	88	100.0
N	Yes	13	23.2	80	97.6
	No	40	71.4	0	-
	Hysterectomy	1	1.8	2	2.4
	No reply	2	3.6	0	-
	Total	56	100.0	82	100.0

Table P.37

Screening History by Cue to Screening and Practice - Women's Health Survey

Practice	Heard or Read anything about cervical smear	Screening History				Significance (χ^2 test)
		Unscreened		Screened		
		No.	%	No.	%	
B	Yes	28	26.7	54	55.1	$p < 0.001$
	No	66	62.9	27	32.5	$p < 0.001$
	Don't know	8	7.6	1	1.2	-
	No reply	3	2.9	1	1.2	-
	Total	105	100.0	83	100.0	-
C	Yes	4	28.6	17	34.7	n.s.
	No	8	57.1	22	44.9	n.s.
	Don't know	1	7.1	7	14.3	-
	No reply	1	7.1	3	6.1	-
	Total	14	100.0	49	100.0	-
H	Yes	25	35.2	49	55.7	$0.025 > p > 0.01$
	No	39	54.9	36	40.9	$0.1 > p > 0.05$
	Don't know	3	4.2	2	2.3	-
	No reply	4	5.6	1	1.1	-
	Total	71	100.0	88	100.0	-
N	Yes	22	39.3	54	65.9	$0.005 > p > 0.001$
	No	26	46.4	26	31.7	$0.1 > p > 0.05$
	Don't know	1	1.8	0	-	-
	No reply	7	12.5	2	2.4	-
	Total	56	100.0	82	100.0	-

contd. over

Table P37 contd.

Practice	Heard or Read anything about cervical smear	Screening History				Significance (χ^2 test)
		Unscreened		Screened		
		No.	%	No.	%	
All Practices	Yes	79	32.1	174	57.6	$p < 0.001$
	No	139	56.5	111	36.8	$p < 0.001$
	Don't know	13	5.3	10	3.3	n.s.
	No reply	15	6.1	7	2.3	$0.05 > p > 0.025$
	Total	246	100.0	302	100.0	-

Table P.38

Screening History by Woman's feeling of Vulnerability to Cervical Cancer - All Practices - Women's Health Survey

Do you think it is likely that you might get Cervical Cancer ?	Screening History				Significance (X^2 test)
	Unscreened		Screened		
	No.	%	No.	%	
No, not at all	34	13.8	38	12.6	n.s.
Possible but unlikely	72	29.3	113	37.4	$0.05 > p > 0.025$
Quite likely	13	5.3	17	5.6	n.s.
Very likely	2	0.8	2	0.7	-
Don't know	116	47.2	126	41.7	n.s.
No reply	9	3.7	6	2.0	n.s.
Total	246	100.0	302	100.0	-

Table P.39

Screening History by Knowledge of Screening and Perception of Own Vulnerability - All Practices - Women's Health Survey

Have you had a smear ?	Do you think it likely you might get cervical cancer?	Screening History				Significance (X^2 test)
		Unscreened		Screened		
		No.	%	No.	%	
Yes	No, not at all	3	4.7	20	7.9	n.s.
	Possible but unlikely	23	35.9	107	42.3	n.s.
	Quite likely	8	12.5	16	6.3	$0.1 > p > 0.05$
	Very likely	0	-	2	-	-
	Don't know	28	43.8	105	41.5	n.s.
	No reply	2	3.1	3	1.2	-
	Total	64	100.0	253	100.0	-
No	No, not at all	11	7.2	5	19.2	-
	Possible but unlikely	48	31.4	4	15.4	$0.1 > p > 0.05$
	Quite likely	5	3.3	1	3.8	-
	Very likely	2	1.3	0	-	-
	Don't know	84	54.9	15	57.7	n.s.
	No reply	3	2.0	1	3.8	-
	Total	153	100.0	26	100.0	-

contd. over

Table P39 contd.

Have you had a smear ?	Do you think it likely you might get cervical cancer?	Screening History				Significance (X^2 test)
		Unscreened		Screened		
		No.	%	No.	%	
Hysterectomy	No, not at all	20	83.3	13	61.9	n.s.
	Possible but unlikely	0	-	2	9.5	-
	Don't know	2	8.3	6	28.6	-
	No reply	2	8.3	2	9.5	-
	Total	24	100.0	21	100.0	-
Don't know	Possible but unlikely	1	33.3	0	-	-
	Don't know	2	66.7	0	-	-
	Total	3	100.0	0	-	-
No reply	No reply	2	100.0	0	-	-
Total	No, not at all	34	13.8	38	12.6	n.s.
	Possible but unlikely	72	29.3	113	37.4	$0.05 > p > 0.025$
	Quite likely	13	5.3	17	5.6	n.s.
	Very likely	2	0.8	2	0.7	-
	Don't know	116	47.2	126	41.7	n.s.
	No reply	9	3.7	6	2.0	n.s.
	Total	246	100.0	302	100.0	-

Table P.40

Screening History by Woman's Perception of her own Vulnerability and Cue to Screening - All Practices - Women's Health Survey

Do you think it likely you might get cervical cancer?	Have you heard or read about the cervical smear?	Screening History				Significance (χ^2 test)
		Unscreened		Screened		
		No.	%	No.	%	
No, not at all	Yes	7	20.6	18	47.4	$0.025 > p > 0.01$
	No	23	67.6	17	44.7	$0.1 > p > 0.05$
	Don't know	0	-	1	2.6	-
	No reply	4	11.7	2	5.3	-
	Total	34	100.0	38	100.0	-
Possible but unlikely	Yes	29	40.3	75	66.4	$p < 0.001$
	No	39	54.2	36	31.9	$0.005 > p > 0.001$
	Don't know	3	4.2	1	0.9	-
	No reply	1	1.4	1	0.9	-
	Total	72	100.0	113	100.0	-

contd. over

Table P.40contd.

Do you think it likely you might get cervical cancer?	Have you heard or read about the cervical smear?	Screening Histroy				Significance (X^2 test)
		Unscreened		Screened		
		No.	%	No.	%	
Quite likely	Yes	11	84.6	14	82.4	n.s.
	No	2	15.4	3	17.6	-
	Don't know	0	-	0	-	-
	No reply	0	-	0	-	-
	Total	13	100.0	17	100.0	-
Very likely	Yes	1	50.0	1	50.0	-
	No	1	50.0	0	-	-
	Don't know	0	-	0	-	-
	No reply	0	-	1	50.0	-
	Total	2	100.0	2	100.0	-
Don't know	Yes	7	7.6	18	23.1	$0.005 > p > 0.001$
	No	72	78.3	51	65.4	$0.1 > p > 0.05$
	Don't know	9	9.8	8	10.3	n.s.
	No reply	4	4.3	1	1.3	-
	Total	92	100.0	78	100.0	-

contd. over

Table P40 contd.

Do you think it likely you might get cervical cancer?	Have you heard or read about the cervical smear?	Screening History				Significance (χ^2 test)
		Unscreend		Screened		
		No.	%	No.	%	
No reply	Yes	0	-	0	-	-
	No	2	22.2	4	66.7	-
	Don't know	1	11.1	0	-	-
	No reply	6	66.7	2	33.3	-
	Total	9	100.0	6	100.0	-
Total	Yes	79	32.1	174	57.6	$p < 0.001$
	No	139	56.5	111	36.8	$p < 0.001$
	Don't know	13	5.3	10	3.3	n.s.
	No reply	15	6.1	7	2.3	$0.05 > p > 0.025$
	Total	246	100.0	302	100.0	-

Table P.41

Screening History by Knowledge of the Efficacy of the Screening Test - All Practices - Women's Health Survey

Would check ups detect an early form of cancer?	Screening History				Significance
	Unscreened		Screened		(X^2 test)
	No.	%	No.	%	
Yes	148	60.2	264	87.4	$p < 0.001$
Sometimes	61	24.8	23	7.6	$p < 0.001$
No	2	0.8	2	0.7	-
Don't know	29	11.8	12	4.0	$p < 0.001$
No.reply	6	2.4	1	0.3	-
Total	246	100.0	302	100.0	-

Table P.42

Screening History and Knowledge of the Efficacy of the Screening Test by Age - All Practices - Women's Health Survey

Age group	Would check ups detect an early form of cancer?	Screening History				Significance (X^2 test)
		Unscreened		Screened		
		No.	%	No.	%	
45 - 49	Yes	30	66.7	41	83.7	$0.1 > p > 0.05$
	Sometimes	9	20.0	6	12.2	n.s.
	Other	6	13.3	2	4.1	-
	Total	45	100.0	49	100.0	-
50 - 54	Yes	40	62.5	71	88.8	$p < 0.001$
	Sometimes	12	18.75	4	5.0	$0.01 > p > 0.005$
	Other	12	18.75	5	6.2	$0.025 > p > 0.01$
	Total	64	100.0	80	100.0	-
55 - 59	Yes	78	56.9	152	87.9	$p < 0.001$
	Sometimes	40	29.2	13	7.5	$p < 0.001$
	Other	19	13.9	8	4.6	$0.005 > p > 0.001$
	Total	137	100.0	173	100.0	-
All ages	Yes	148	60.2	264	87.4	
	Sometimes	61	24.8	23	7.6	
	Other	37	15.0	15	5.0	
	Total	246	100.0	302	100.0	

Table P.43

Screening History by Belief in the Efficacy of Early Treatment
- All Practices - Women's Health Survey

Would early treatment make any difference?	Screening History				Significance (X^2 test)
	Unscreened		Screened		
	No.	%	No.	%	
Yes, she can be cured	105	42.7	144	47.6	n.s.
Yes, she may have a better chance of a cure	120	48.8	144	47.6	n.s.
No, the cancer will not change in that time	0	-	1	0.3	-
No, she will die anyway	0	-	2	0.7	-
Don't know	16	6.5	9	3.0	$0.05 > p > 0.025$
No reply	5	2.0	2	0.7	-
Total	246	100.0	302	100.0	-

Table P.44

Screening History by Belief in ability of the Screening Test to Detect Disease at a Curable Stage by Age - All Practices - Women's Health Survey

Age Group	Would a check Up enable Tretment at a Curable Stage?	Screening Histroy				Significance (X^2 test)
		Unscreened		Screened		
		No.	%	No.	%	
45 - 49	Yes	29	64.4	40	81.6	$0.1 > p > 0.05$
	Sometimes	13	28.9	7	14.3	$0.1 > p > 0.05$
	Don't know	3	6.7	2	4.1	-
	Total	45	100.0	49	100.0	-
50 - 54	Yes	35	54.7	72	90.0	$p < 0.001$
	Sometimes	19	29.6	6	7.5	$p < 0.001$
	Don't know	20	10.9	2	2.5	$p < 0.001$
	No reply	3	4.7	0	-	-
	Total	64	100.0	80	100.0	-
55 - 59	Yes	92	67.2	150	86.7	$p < 0.001$
	Sometimes	32	23.4	17	9.8	$p < 0.001$
	Don't know	10	7.3	5	2.9	$0.1 > p > 0.05$
	No reply	3	2.2	1	0.6	-
	Total	137	100.0	173	100.0	-
All Ages	Yes	156	63.4	262	86.8	$p < 0.001$
	Sometimes	64	26.0	30	9.9	$p < 0.001$
	Don't know	20	8.1	9	3.0	$0.01 > p > 0.005$
	No reply	6	2.4	1	0.3	-
	Total	246	100.0	302	100.0	-

Table P.45

Screening History by Cue to Screening, Efficacy of the Test and Belief in the Ability of the Test to Detect Disease at a Curable Stage - All Practices - Women's Health Survey

Heard or read anything about the test?	Would check ups detect an early form of cancer?	Would check ups enable treatment at a curable stage?	Screening History				Significance (χ^2 test)
			Unscreened		Screened		
			No.	%	No.	%	
Yes	Yes	Yes	52	88.1	149	93.7	n.s.
		Sometimes	7	11.9	8	5.0	$0.1 > p > 0.05$
		No	0	-	1	0.6	-
		Don't know	0	-	1	0.6	-
		Total	59	100.0	159	100.0	-
	Sometimes	Yes	9	60.0	10	71.4	n.s.
		Sometimes	6	40.0	4	28.6	n.s.
		Total	15	100.0	14	100.0	-
	Don't know	Yes	1	20.0	0	-	-
		Don't know	4	80.0	1	100.0	-
		Total	5	100.0	1	100.0	-

contd. over

Table P45 contd.

Heard or read anything about the test?	Would check ups detect an early form of cancer?	Would check ups enable treatment at a curable stage?	Screening History				Significance (χ^2 test)
			Unscreened		Screened		
			No.	%	No.	%	
Yes	Total	Yes	62	78.5	159	91.4	$0.005 > p > 0.001$
		Sometimes	13	16.5	12	6.9	$0.025 > p > 0.01$
		No	0	-	1	0.6	-
		Don't know	4	5.1	2	1.1	-
		Total	79	100.0	174	100.0	-
No	Yes	Yes	68	81.0	86	94.5	$0.01 > p > 0.005$
		Sometimes	12	14.3	4	4.4	$0.05 > p > 0.025$
		Don't know	4	4.8	1	1.1	-
		Total	84	100.0	91	100.0	-
	Sometimes	Yes	7	16.7	8	57.0	$0.005 > p > 0.001$
		Sometimes	29	69.0	4	28.6	$0.01 > p > 0.005$
		No	1	2.4	1	7.1	-
		Don't know	5	11.9	1	7.1	-
		Total	42	100.0	14	100.0	-
	Don't know	Sometimes	0	-	1	16.7	-
		Don't know	12	100.0	5	83.3	n.s.
		Total	12	100.0	6	100.0	-

contd. over

Table P45 contd.

Heard or read anything about the test?	Would check ups detect an early form of cancer?	Would check ups enable treatment at a curable stagr?	Screening History				Significance (X^2 test)
			Unscreened		Screened		
			No.	%	No.	%	
No	No reply	No reply	1	100.0	0	-	-
	Total	Yes	75	54.0	94	84.7	$p < 0.001$
		Sometimes	41	29.5	9	8.1	$p < 0.001$
		No	1	0.7	1	0.9	-
		Don't know	21	15.1	7	6.3	$0.05 > p > 0.025$
		No reply	1	0.7	0	-	-
		Total	139	100.0	111	100.0	-
Don't know	Yes	Yes	3	60.0	4	66.7	-
		Sometimes	2	40.0	1	16.7	-
		Don't know	0	-	1	16.7	-
		Total	5	100.0	6	100.0	-
	Sometimes	Yes	1	20.0	1	50.0	-
		Sometimes	4	80.0	1	50.0	-
		Total	5	100.0	2	100.0	-

contd. over

Table P45 contd.

Heard or read anything about the test?	Would check ups detect an early form of cancer?	Would check ups enable treatment at a curable stage?	Screening History				Significance (X^2 test)
			Unscreened		Screened		
			No.	%	No.	%	
Don't know	Don't know	Don't know	3	100.0	2	100.0	-
	Total	Yes	4	30.8	5	50.0	-
		Sometimes	6	46.2	2	20.0	-
		Don't know	3	23.1	3	30.0	-
		Total	13	100.0	10	100.0	-
No reply	Yes	Yes	7	87.5	6	100.0	n.s.
		Don't know	1	12.5	0	-	-
		Total	8	100.0	6	100.0	-
	Sometimes	Sometimes	1	50.0	0	-	-
		No	1	50.0	0	-	-
		Total	2	100.0	0	-	-
	No reply	No reply	5	100.0	1	100.0	-

contd. over

Table P45contd.

Heard or read anything about the test?	Would check ups detect an early form of cancer?	Would check ups enable treatment at at a curable stage?	Screening History				Significance (X^2 test)
			Unscreened		Screened		
			No.	%	No.	%	
No reply	Total	Yes	7	46.7	6	85.7	$0.1 > p > 0.05$
		Sometimes	1	6.7	0	-	-
		No	1	6.7	0	-	-
		Don't know	1	6.7	0	-	-
		No reply	5	33.3	1	14.3	-
		Total	15	100.0	7	100.0	-
Total	Yes	Yes	130	83.3	245	93.5	$p < 0.001$
		Sometimes	21	13.5	13	5.0	$0.005 > p > 0.001$
		No	0	-	1	0.4	-
		Don't know	5	3.2	3	1.1	-
		Total	156	100.0	262	100.0	-
	Sometimes	Yes	17	26.6	19	63.3	$p < 0.001$
		Sometimes	40	62.5	9	30.0	$0.005 > p > 0.001$
		No	2	3.1	1	3.3	-
		Don't know	5	7.8	1	3.3	-
		Total	64	100.0	30	100.0	-

contd. over

Table P45 contd.

Heard or read anything about the test?	Would check ups detect an early form of cancer?	Would check ups enable treatment at a curable stage?	Screening History				Significance (χ^2 test)
			Unscreened		Screened		
			No.	%	No.	%	
Total	Don't Know	Yes	1	5.0	0	-	-
		Sometimes	0	-	1	11.1	-
		Don't know	19	95.0	8	88.9	n.s.
		Total	20	100.0	9	100.0	-
	No reply	No reply	6	100.0	1	100.0	-
	Total	Yes	148	60.2	264	87.4	$p < 0.001$
		Sometimes	61	24.8	23	7.6	$p < 0.001$
		No	2	0.8	2	0.7	-
		Don't know	29	11.8	12	4.0	$p < 0.001$
		No reply	6	2.4	1	0.3	-
		Total	246	100.0	302	100.0	-